

The MINING CONGRESS JOURNAL

■
MAY
1932
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announce
three more new and exclusive additions to their extensive line of
mining plant equipment . . . three more proofs of our unceasing
effort to render the greatest possible service to the Coal Mining
Industry:

Wuensch Differential Density Coal Cleaning Process
Kleen Blox Coal Blocking Process
Ro-Sieve Screen

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We have also been appointed exclusive agents for Zeiss-Dywidag
Concrete "Shell Domes" and "Barrel Shell Roofs" for large con-
struction.

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The above, with our standard equipment which includes Marcus
Screens, Menzies Hydro Separators, and Car Dumper Equipment,
offers you everything necessary to build complete, modern, coal
mining plants

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ENGINEERS and CONTRACTORS

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WHILE the "Highway to Profits" leads principally along the route of mechanization and improved preparation—remember the road will be smoother—and shorter—by the skillful application of the correct machinery for your individual needs.

Link-Belt equipment for cleaning, handling, sizing, screening, and dumping, is composed of proved, long-lived, and efficient units, *all manufactured in our own shops*, under the supervision of the designing engineers.

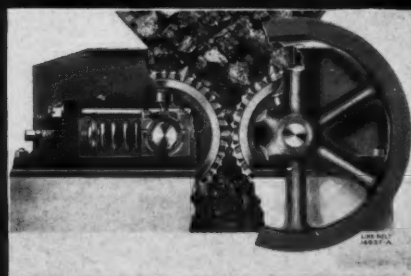
Link-Belt has acquired a vast fund of experience through solving many practical coal preparation problems. That invaluable ingredient—the "know how"—has come out of that pioneering experience.

Let Link-Belt engineers pilot you over the gap that leads to the "Highway to Profits."

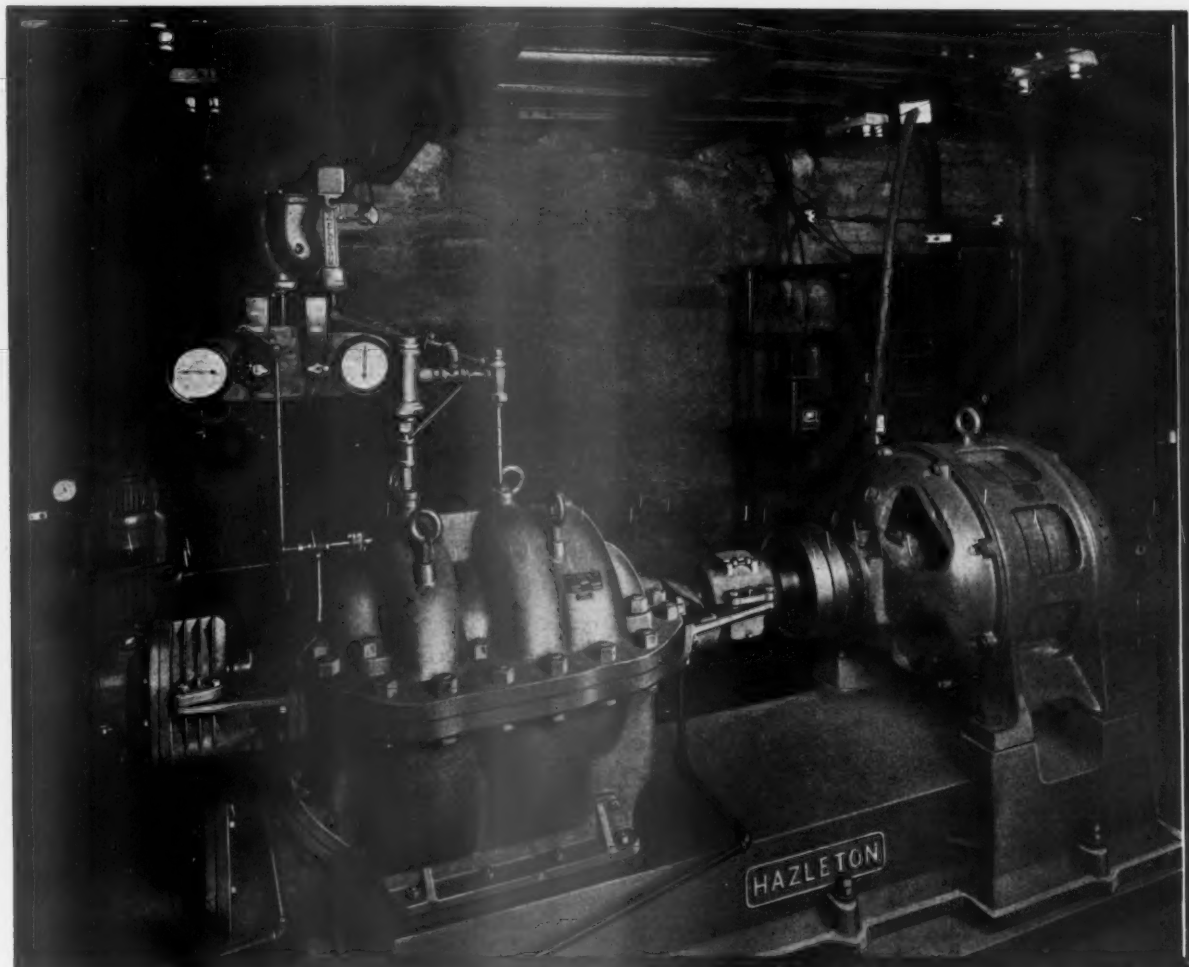
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Complete Equipment for the Handling, Preparation and Washing of Coal
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Hazleton 2,000 G. P. M., 300 Ft. Hd. Pump—200 H. P.—Fully protected by Hazleton Automatic Priming and Control Equipment

WHAT WOULD HAPPEN TO YOUR PUMP;

- If it were started without being properly primed?
- If it should lose its water during operation?
- If the suction line should become blocked?
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Unless Automatic Control is provided, any one of these conditions would probably result in a heavy repair bill, and a serious delay.

With Automatic Control, the pump would stop and

the alarm would be sounded. Aside from this complete protection, Automatic Control also offers worth while savings in labor, power, and maintenance costs.

May we send you full particulars?

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THE MINING CONGRESS JOURNAL

C O N T E N T S

May
1932

VOLUME 18, NUMBER 5

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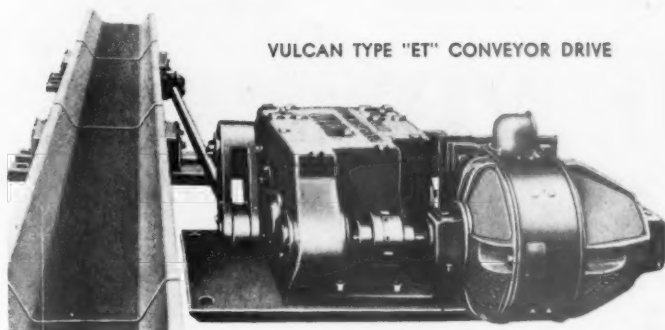
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Shaking conveyor drives of *all around* usefulness



VULCAN TYPE "ET" CONVEYOR DRIVE

IT IS not necessary with the new Vulcan "ET" Conveyor Drives to take rock in low coal.

These low drives, available in three sizes, can be arranged for either side or overhead chute con-

nection, and may be located near the discharge end or at any point along the chute. In longwall mining or where uneven bottom might cause buckling of the conveyor chute it is advantageous to locate drive about midway—this location also reduces the load on chute and coupling bolts. These drives are equipped with anti-friction bearings and lubrication is automatic. Strength is added without increasing size through the use of special steels and heat treated gears. No foundations are required. A flexible coupling connects the motor to the drive, permitting easy removal of the motor, eliminating the disadvantages of the overhung pinion, absorbing shocks and vibration, greatly increasing the life of motors and drives.

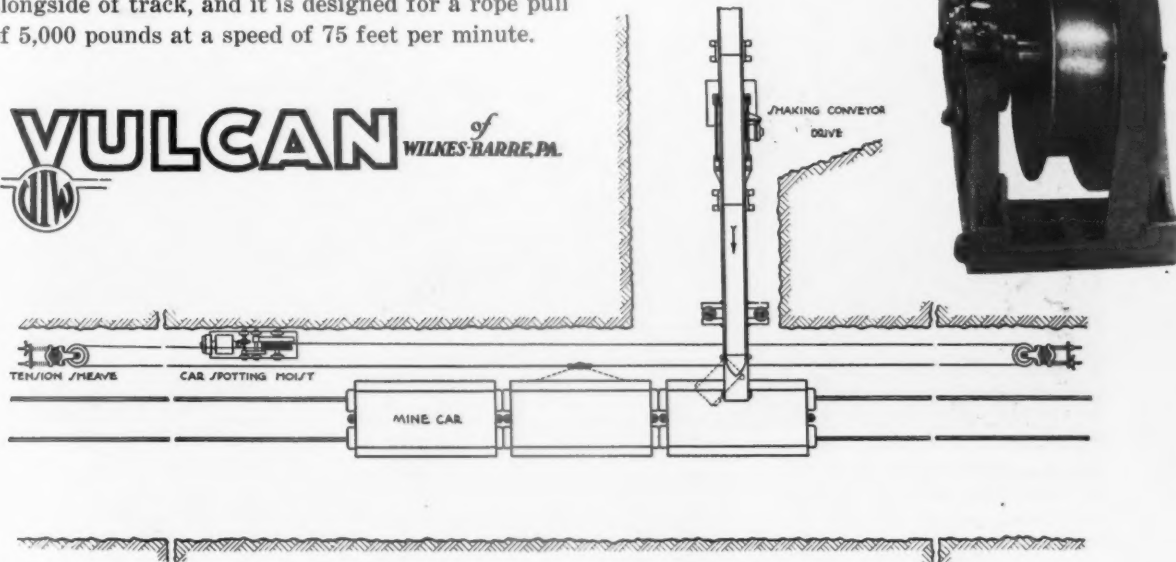
and a car spotting hoist that speeds loading

The Vulcan Car Spotting Hoist designed particularly for spotting mine cars at the discharge end of shaking conveyors is operated remotely by means of push button control, permitting operation of hoist, shaking conveyor and the loading of cars to be done by one man.

The hoist is a ruggedly constructed triple gear reduction unit with a cast steel single niggerhead type drum. Its narrow width allows installation alongside of track, and it is designed for a rope pull of 5,000 pounds at a speed of 75 feet per minute.

The endless rope passes several times around the drum, and two specially designed tension sheaves. Cars are attached to rope by means of a chain and rope clamp so cars may be moved in either direction.

Let us send you descriptive bulletins or quote you on your requirements.

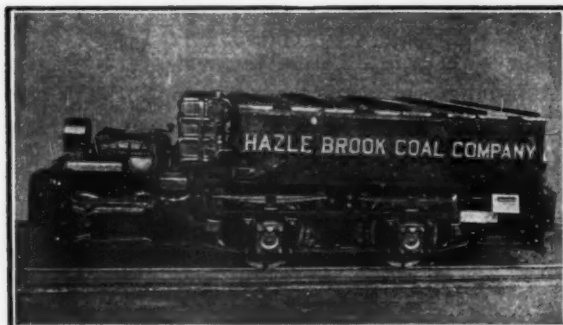


VULCAN IRON WORKS, WILKES-BARRE, PENNA.

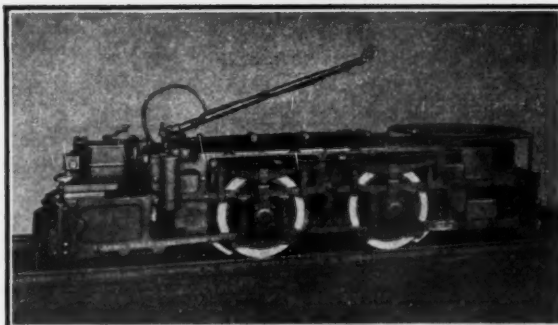
TURN

Red Tonnage—that portion of your production which goes to pay operating expenses. The remainder—Black Tonnage, is your profit.

*** PROFITS**
OPERATING COSTS



A Baldwin-Westinghouse Permissible Storage Battery Locomotive, A-8-3 chassis with outside frame.



An 8-ton Locomotive for gathering service at Elkhorn Piny Coal Mining Co. Its compactness reduces derailments.



The barsteel frame of Baldwin-Westinghouse Locomotives weighs less, yet is stronger. A 30-ton, 3-motor Haulage Locomotive—one of the Black Tonnage factors at New River and Pocahontas Coal Company.

Westinghouse

Quality workmanship guarantees every Westinghouse product

TO BLACK

with

Baldwin-Westinghouse Locomotives

MORE power in less space. That's one reason why Baldwin-Westinghouse mine locomotives help to reduce coal gathering and haulage costs.

Derailments have been minimized by these modern locomotives because they are shorter in overall length than any other similar locomotive of the same height and capacity.

Heavier sustained loads can be pulled without overheating because of their higher continuous capacity.

Their barsteel frames weigh less, yet are stronger.

And to keep traction motors "on the job" and out of shop, Westinghouse has recently developed a non-deteriorating coil insulation with the following qualities:

Crack-Proof Under Abnormal Temperatures

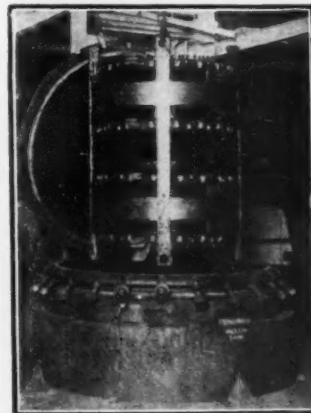
Heavy, sustained hauls—intermittent gathering service—heavy peak currents at starting—these conditions are met by this exclusive flexible in-

sulating compound which does not crack under temperature changes.

No Insulation Pores to Absorb Moisture

When the motor cools off between shifts, underground humidity gets no further than the surface of the motor's coils. The Westinghouse Vacuum Impregnation process with its solventless compound excludes the tiny bubbles and the crystal-line structure (lodging place for moisture) in the usual motor insulation.

Literature describing the many types and sizes of Baldwin-Westinghouse mine locomotives will be sent to you upon request. Simply mail the coupon.



Westinghouse Vacuum Impregnation process excludes the tiny bubbles of the usual traction motor insulation and hence removes the lodging places for moisture. The special vacuum dipping tank is shown.

This Baldwin-Westinghouse Explosion-tested Cable-reel Locomotive minimizes derailments at Houston Collieries. It has 3-point equalization—a patented feature which reduces strains on the locomotive frame and keeps all four wheels on the track.



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Please send me, without cost or obligation, your booklet, "Looking Ahead Twenty Years in Wood Utility."

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FEWER TIMBER REPLACEMENTS

mean

Increased Operating Profit

•

Mine Timbers Treated with ZINC CHLORIDE

are

**ROT-PROOF
TERMITE-RESISTANT
FIRE-RETARDING**

THE Zinc Chloride treatment of mine timbers adds but little to the cost of untreated timbers, yet it extends their life from 3 to 6 times which means that *it eliminates at least two-thirds of all timber replacements.*

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Zinc Chloride-treated wood is *rot-proof, termite-resistant, and fire-retarding.* It is clean,

odorless, and paintable.

For greatest economy, every mine timber or tie as well as all structural timbers should be preserved with Zinc Chloride.

If you are not already using the Zinc Chloride treatment in *your* operations, send the coupon at once. It will point the way towards maximum economy.

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ZINC CHLORIDE
A Positive Preventive of DECAY in Mine Timbers



Robbing Peter to Pay Paul

How long since you measured the electrical efficiency of your power circuits? Have your rooms and headings become so far removed from your main source of power supply, that the electrical losses in your conductors justify their replacement with larger ones? It is false economy to have the cir-mil area of trolley wire, trolley feeders or light feeder circuits too small.

Our Engineering Department will gladly assist you in determining the facts . . . and will recommend conductors of the proper size.



ANACONDA WIRE AND CABLE COMPANY

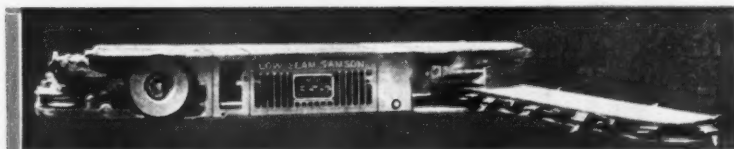
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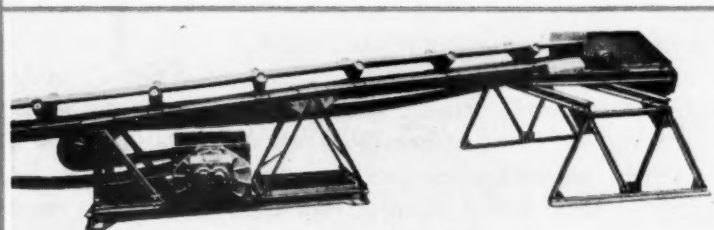
Double barreled NEWS for all coal men

*JOY and MAVOR &
COULSON lines unite
for world-wide service*



JOY-M. & C. LOW SEAM SAMSON COALCUTTER

12 in. high, 8 ft. long, and 25 in. wide—smallest dimensions with full power and strength. Ten-speed haulage instantly variable from 10 in. to 20 ft. per minute. Thick and thin seams, hard and soft holings, steep faces and irregular faces—the Low Seam Samson cuts them all rapidly and economically. It can slip past tight packs, whip around awkward corners and pass freely under low roofs. Moving parts are few and their construction simple, assuring extra strength. Maintenance is low. Full details in Catalog 4b.



JOY-M. & C. TROUGHD BELT CONVEYORS

New service, new scope, new equipment! Joy Manufacturing Company and Mavor & Coulson, Ltd., of Glasgow, Scotland, have united to render new service to coal mining throughout the world. In addition to manufacturing coal loading machines of the greatest all around ability, Joy now handles the complete Mavor & Coulson line of coal mining equipment. The high standard and ability of M. & C. machines is well known in every coal field of the world. Let us send you information about the full line or about any piece of equipment in which you are particularly interested. We are prepared to render you a greatly extended service.

These conveyors carry material silently and without breakage. Driving mechanism is compact and easily handled. Ball bearings are used throughout and gears are splash lubricated, requiring infrequent attention. Single driving drum of large diameter saves belt from reversed bending. Return belt is covered by protective decking. Easy adjustability prevents side wear of belt. Close spacing of troughing idlers preserves form of upper belt without excessive tension. Wear on belts is small resulting in remarkably long belt life. Complete details of construction and operating flexibility in Catalog 9a.

JOY MANUFACTURING COMPANY, FRANKLIN, PENNA.

*And now a still newer "low"
for mechanical loading—the*

8-BU

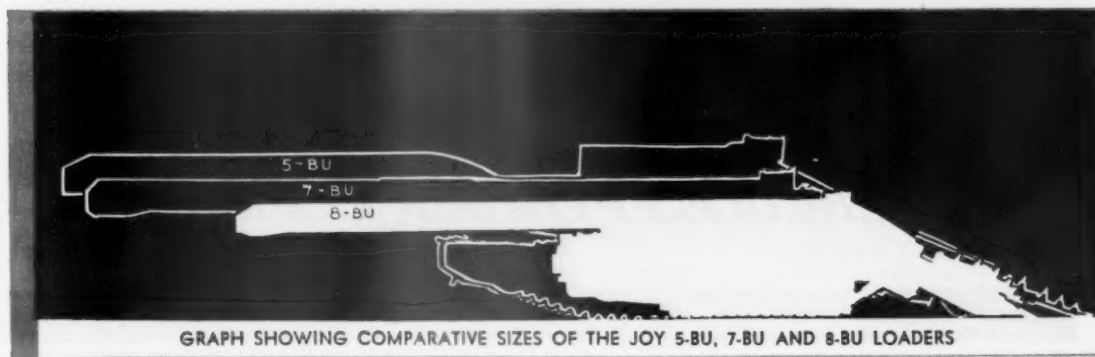
*Lower in height
Lower in price*

The time-proven Joy loading mechanism in a new and lower machine! The comparative size of the new Joy 8-BU is shown below. This loader extends still further the limits of mechanization. Still lower coal seams are given the benefits of completely mechanical loading. Like the 7-BU, the loading

boom of the new 8-BU is fed by a single flight conveyor which bends to any position up to 45° on either side of center line. New refinements of design guarantee new efficiencies. The gathering arms are flexible and have increased capacity with a gentler swing. Write for complete details or see this new low coal loader at Cincinnati.

*See our exhibit at the Coal Convention of
The American Mining Congress in
Cincinnati, May 2-7.*

Booths 531, 535 and 537



GRAPH SHOWING COMPARATIVE SIZES OF THE JOY 5-BU, 7-BU AND 8-BU LOADERS

HERCULES EXPLOSIVES MAXIMUM PERFORMANCE ECONOMY SAFETY

YOU want to know the resources of your bank. Why not inquire about the resources for service and research behind the company that



supplies your explosives?

HERCULES POWDER COMPANY

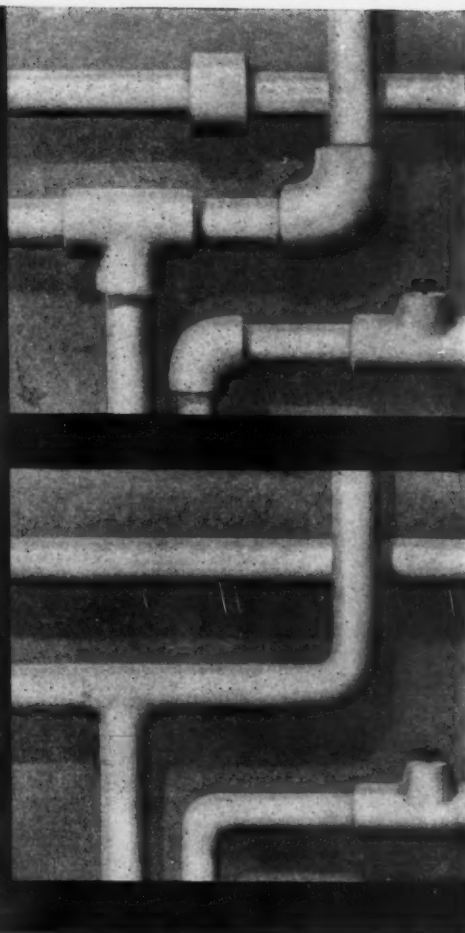
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WILMINGTON, DELAWARE

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IT'S
INSULATING THE
B-u-m-p-s
That is expensive



WELEDGED piping is cheaper to insulate because it has no bulky joints which require special jackets.

Welded joints are practically flush with the surface of the pipe. They can be covered with standard insulation. No extra costs are involved. No extra time is consumed. And, once covered, they are permanently covered. Properly welded pipe joints never leak.

Low erection cost of insulation is only one of the many advantages of oxy-acetylene welded piping. For architects, engineers, and specification writers who are looking for a better method of installing piping at lower cost, we have prepared a short, interesting book, "Oxwelded Construction for Modern Piping Services." Write for your copy today. We will send it without cost or obligation on your part.



This picture shows the smooth, strong joint produced by oxy-acetylene welding. How oxwelding and cutting simplify piping installation is clearly shown in a new series of motion pictures now available for free distribution. Your professional or trade organization will find these pictures interesting and helpful. Write for release details.



THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

126 Producing Plants



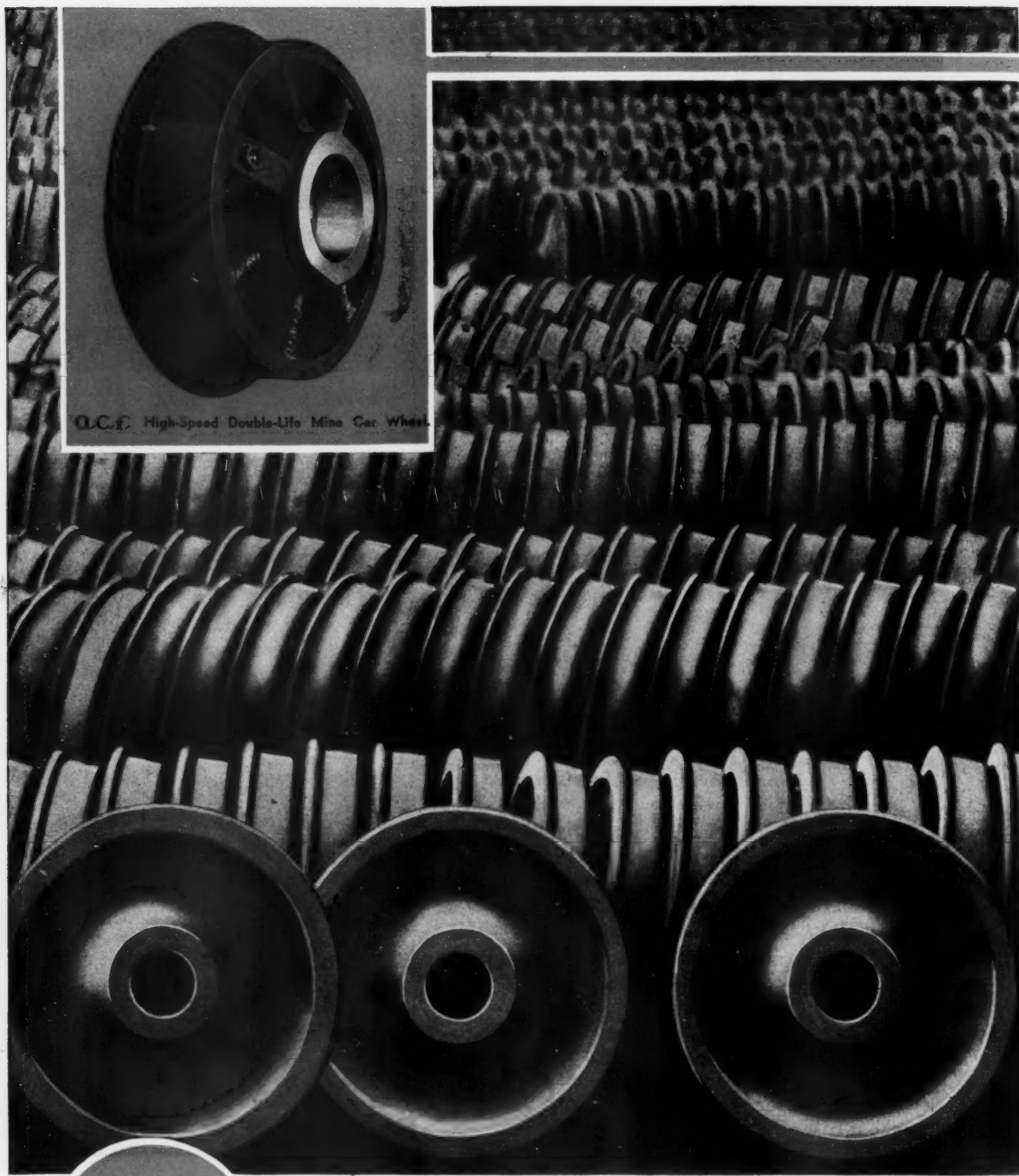
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District Offices

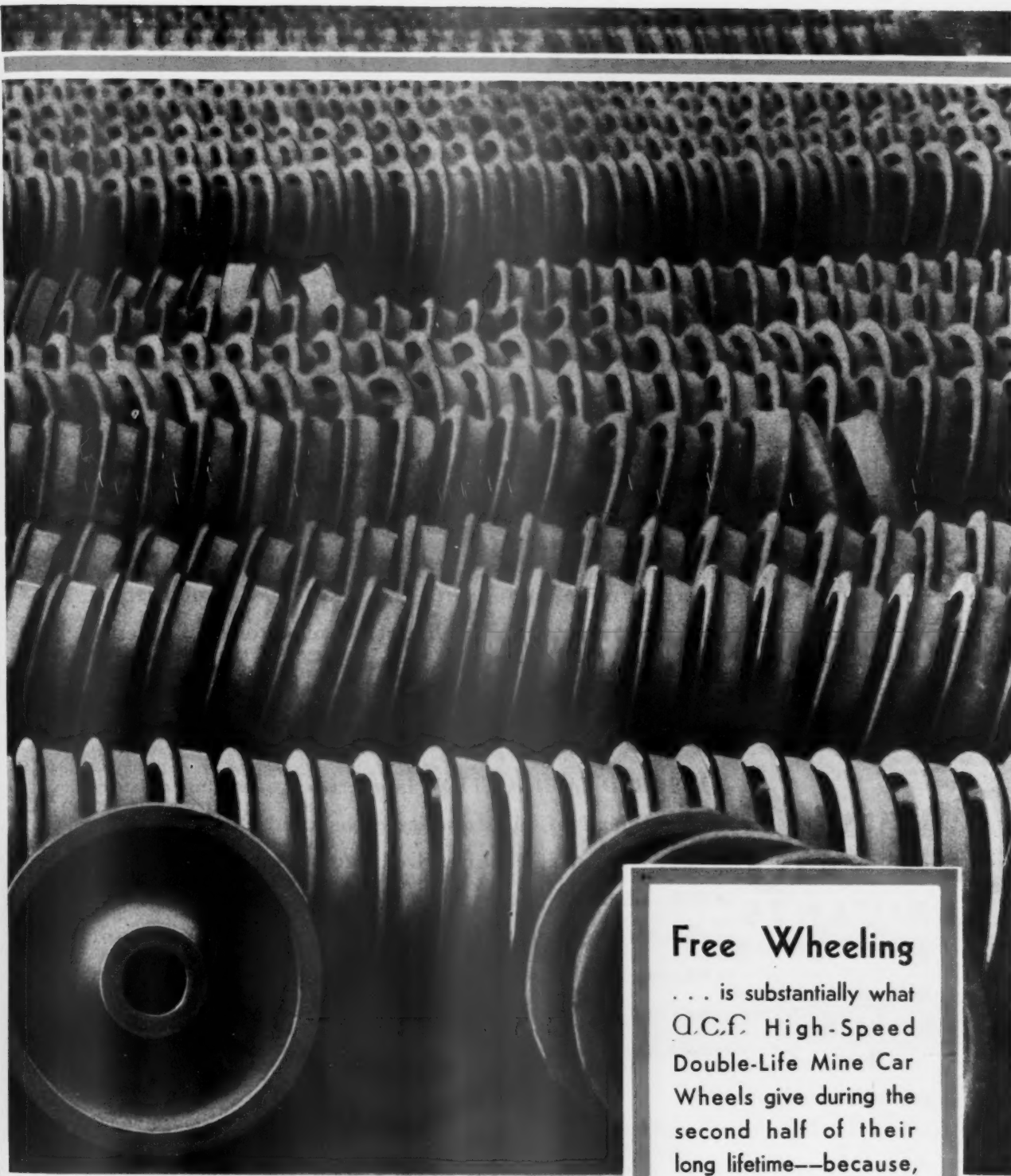
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... is substantially what
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Double-Life Mine Car
Wheels give during the
second half of their
long lifetime—because,
although costing but little
more than other wheels,
they give double the
service.

Three Leaders

IN COAL MINE ECONOMY



234

A NEW BRUSH for heavy duty, D.C. power equipment. Possesses superior commutating characteristics, low friction and high carrying capacity. Designed to withstand heavy load surges and prolonged overloads. The non-resilient structure of this brush assures exceptionally firm contact with the commutator, eliminating a frequent cause of sparking, maintaining excellent commutator surface and minimizing brush and commutator wear.



869

A MOTOR BRUSH for mine locomotives and other motorized mine equipment. This brush has demonstrated its ability to reduce brush and commutator maintenance costs under the severe operating conditions necessarily encountered in mine service.

GREDA
REG. U. S. PAT. OFF.
LUBRICANTS

INSURED LUBRICATION is offered by Gredag, a thorough blend of high quality grease and PURE Acheson electric furnace graphite. Gredag lubricants are especially well adapted to the difficult lubrication problems encountered in coal mine service. The enduring quality of Gredag lubrication and the superior protection it affords against rust and corrosion are reasons for the established fact that Gredag reduces lubrication costs.

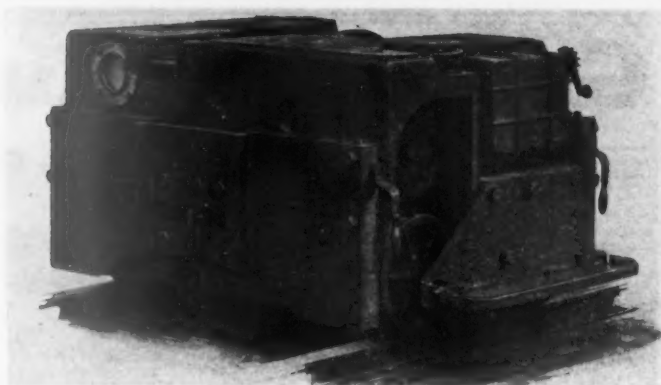
** Visit our Booth—No. 301—at the National Exposition of Coal Mine Equipment, at Cincinnati, Ohio, May 2-7, 1932.*

NATIONAL CARBON COMPANY, INC.

Carbon Sales Division, Cleveland, Ohio
Unit of Union Carbide  and Carbon Corporation

BRANCH SALES OFFICES: • NEW YORK • PITTSBURGH • CHICAGO • SAN FRANCISCO

NEW JEFFREY CAR SPOTTER



Speeds Up Car Handling Behind Loading Machines

Spotting cars for machine loading is greatly simplified with this NEW Jeffrey Car Spotter. It speeds up switching and coupling operations and substantially reduces the time required for car change.

It is designed for use between the loading machine and the car that is being loaded—an operation that cannot be performed by a standard gathering locomotive.

The Jeffrey Car Spotter handles one car at a time—one man can operate it and trim the car, doing a better job than two men with a standard gathering locomotive handling a train of 5 or 6 empties at a time behind the loader.

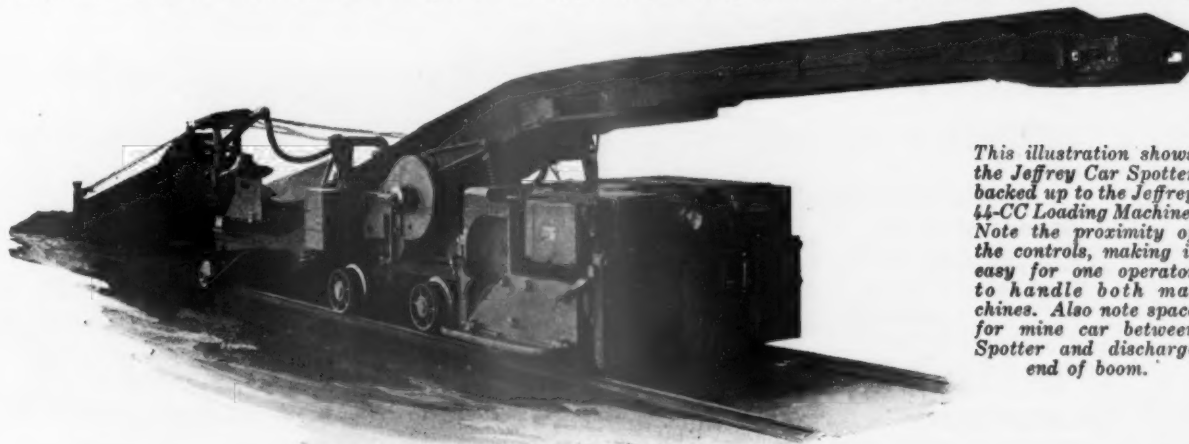
It is built for gauges from 36" to 48"—overall length 48"—wheel-base 22"—overall height, 32¾" and weight—5 tons. It embodies many standard locomotive features; Quick-acting Brake, Class 21 Controller, Headlights—front and rear, double direction mechanically driven Cable Reel with accessible controls, Folding Step to reduce width if necessary, etc.

Folder No. 539-A gives complete details of the Jeffrey Car Spotter. Write for it today.

The Jeffrey Manufacturing Company 958-99 North Fourth St., Columbus, Ohio

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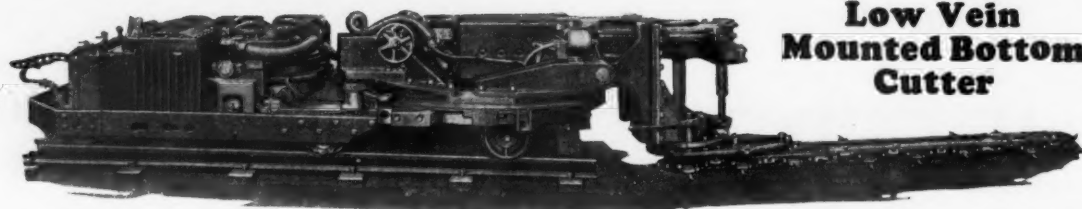


This illustration shows the Jeffrey Car Spotter backed up to the Jeffrey 44-CC Loading Machine. Note the proximity of the controls, making it easy for one operator to handle both machines. Also note space for mine car between Spotter and discharge end of boom.

Goodman Mining Equipment

Cutters

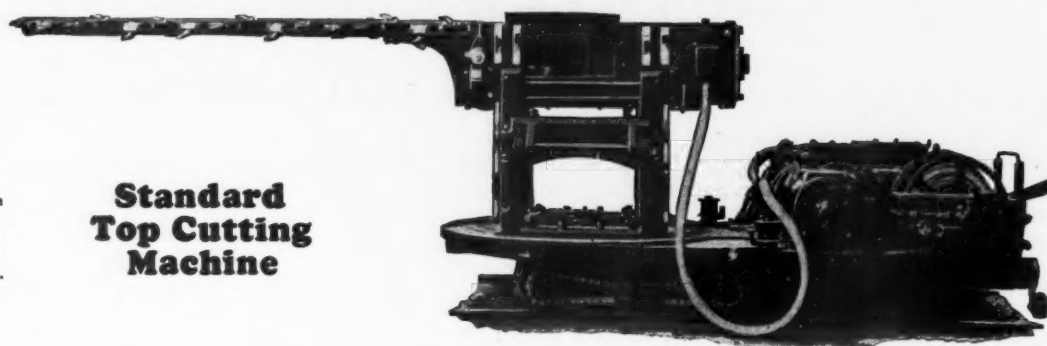
Standard
Height
Mounted
Bottom
Cutter Also
Available.



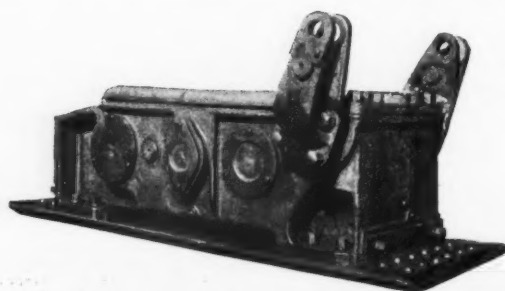
**Low Vein
Mounted Bottom
Cutter**

Low Vein
Top
Cutting
Machine
Also
Available.

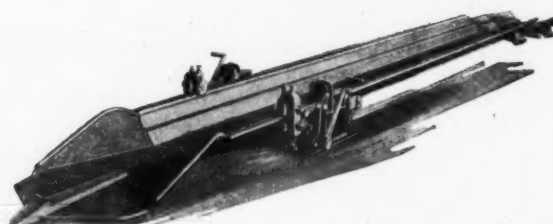
**Standard
Top Cutting
Machine**



Loaders



Cosco Shaker Conveyors



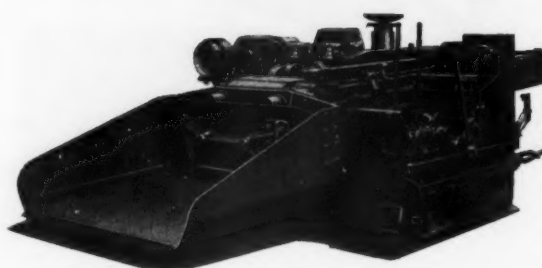
Duckbill Loading Head

**Mobile Type Scraper
Loader**



Stationary Types
Also Available

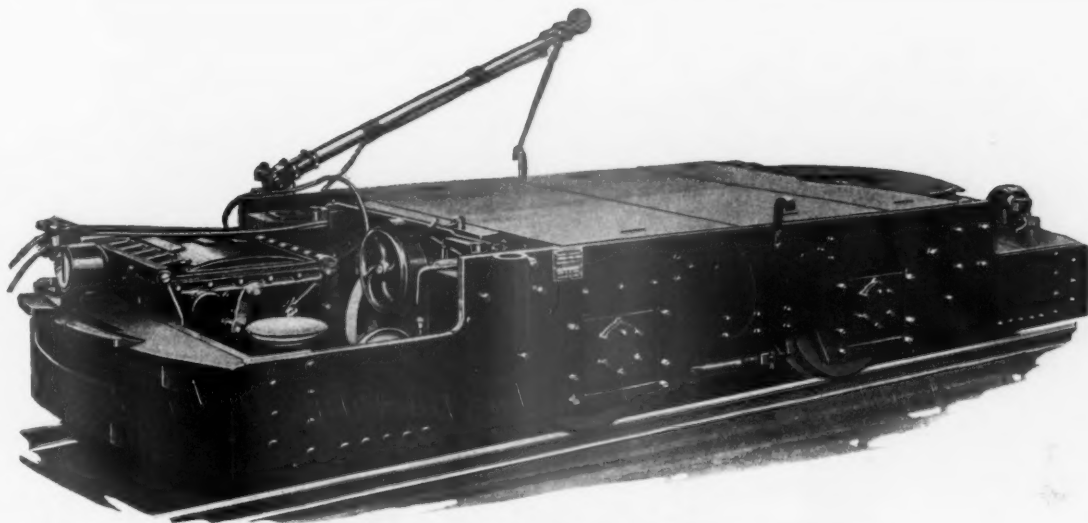
**Standard Power
Shovel**



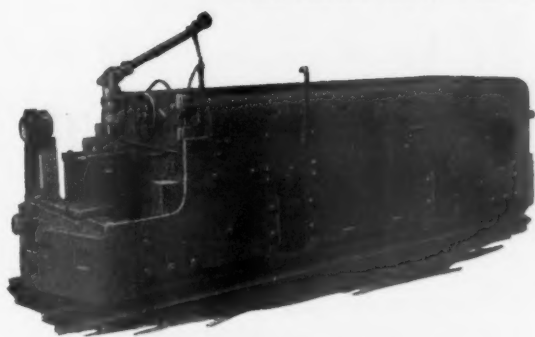
Other Types
for
Special
Conditions

ment—Meets Every Mining Condition

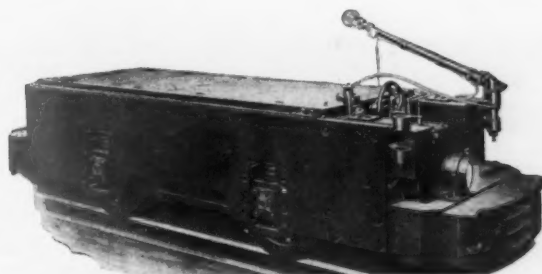
Locomotives



Two-Motor Low Vein Safety Gathering Locomotive



13-Ton Narrow Gauge Locomotive



15-Ton Main Haulage Locomotive

Other Goodman Equipment

Shortwalls—Longwalls—Channeling Machines

Storage Battery Locomotives—Hoists—Drills

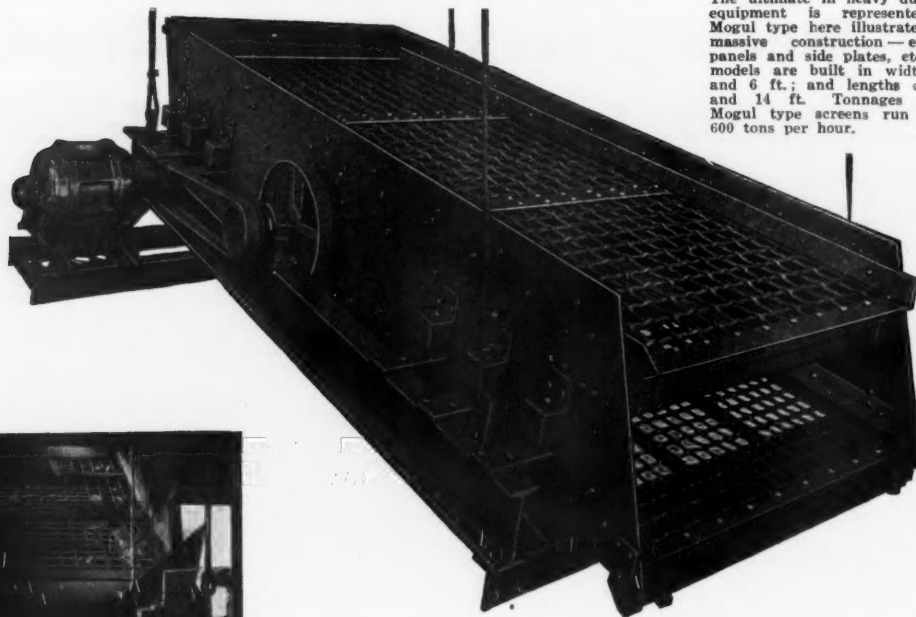
Special Machines For Special Conditions

GOODMAN

Locomotives - Loaders - Coal Cutters

**MANUFACTURING
COMPANY**
HALSTED ST. at 48TH.
CHICAGO --- ILL.

PITTSBURGH—WILKES-BARRE—HUNTINGTON, W.VA.—BIRMINGHAM—ST LOUIS—DENVER—PRICE, UTAH



The ultimate in heavy duty screening equipment is represented by our Mogul type here illustrated. Note its massive construction—extra heavy panels and side plates, etc. Standard models are built in widths of 4, 6, and 6 ft.; and lengths of 8, 10, 12 and 14 ft. Tonnages handled by Mogul type screens run as high as 600 tons per hour.



Close-up of Niagara Roller Bearing Screen at Tipton of Hout-Block Coal Corp., Laferty, Ohio.



Tipton of Hout-Block Coal Corp., at Laferty, Ohio. Niagara Screen delivering accurately sized coal to car.

**NIAGARA CONCRETE
MIXER COMPANY**
BUFFALO, N. Y.

Offices in principal cities

Now, BETTER SIZING - - - at LOWER COST

The introduction of the Niagara Vibrating Screen into the Coal Industry after five years of highly successful service in many other industries, is now enabling progressive operators to secure better sizing at lower cost than has heretofore been possible. An ingenious arrangement of eccentrics gives a rotary motion which vibrates the screens both horizontally and vertically—against the flow of material. This action not only "Cuts" the material but cleans the screen at the same time. Other advantages are:

Perfect balance at all speeds
Roller Bearings sealed against dust
Readily Replaceable Screen Panels
Uniform Throw at all points on Screening Surface.

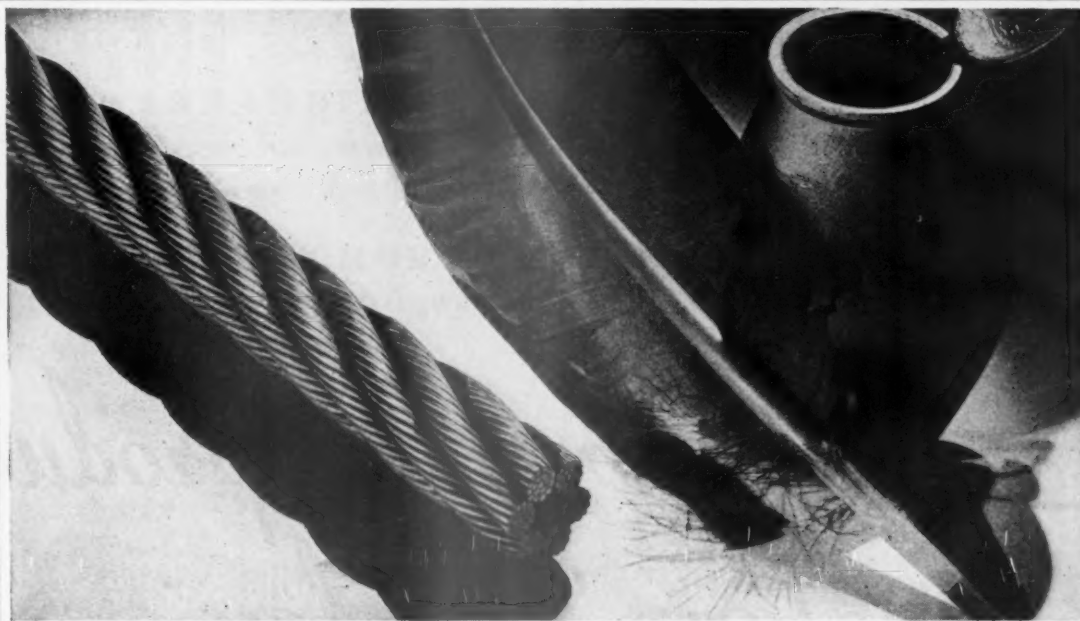
Enormous Capacity with minimum power consumption.

Powerful Construction that minimizes upkeep.

No matter what your screening problem may be, our wide line of standard designs will meet your requirements effectively and economically. Any capacity up to 600 tons per hour—any sizes from run-of-mine to slack. Write for complete catalog.

NIAGARA

ROLLER BEARING SCREENS



A *Plain* STATEMENT about **Roebling Rope economy**

Recently much has been published regarding the service and economy of wire ropes.

For the guidance of rope buyers, therefore, Roebling desires to make the following statement, concerning the operating cost of its ropes, backed up by their performance in actual service over a period of many years:—

"Roebling does assert that when gauged by the work performed, NO wire rope, regardless of make or construction, will show lower general average operating costs than Roebling."

If you are not a user of Roebling Rope we invite you to try it—to see first hand evidence of its great stamina. We do not ask you to accept the service record of a single rope as conclusive proof of the general performance of Roebling Rope. Put Roebling Rope to the only reliable and most exacting rope service test:—judge it on the basis of its *average* cost per ton of material handled, per miles of travel, or other unit of service measurement.

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, N. J.

Wire·Wire Rope·Copper & Insulated Wires & Cables·Welding Wire·Flat Wire·Wire Cloth & Wire Netting
Branches in Principal Cities Export Dept.—New York, N.Y.

Wire Rope for all purposes

There is no such thing as a wire rope "cure-all". No one design of wire rope is suitable for all purposes. ¶Roebling makes wire rope of a great variety of types and constructions, and therefore can supply a wire rope exactly suited to each particular requirement. ¶The great stamina of all Roebling Ropes is primarily due to the quality of Roebling Wire. This Acid Steel Wire is renowned for its fatigue and wearing qualities. No better rope wire is produced. ¶"BLUE CENTER" STEEL is the highest grade and is generally recommended for severe duty.

JOHN A. ROEBLING'S SONS COMPANY



*Every operator producing
800 tons per day or more
can now profitably utilize the
RHEOLAVEUR PROCESS*



KOPPERS-RHEOLAVEUR COMPANY

now offers

STANDARDIZED UNITS
in sizes for washing 75 to
250 tons per hour

MADE-TO-ORDER-UNITS
for larger tonnages and 24
hour operation



With the new standardized self-contained units developed and perfected by Koppers-Rheo engineers,—the Rheo-laveur process can now be PROFITABLY and EFFICIENTLY adopted by any coal operator producing 75 tons or more per hour.

Moreover it is not necessary to revamp and rebuild your entire plant to accommodate these units,—they can be installed in your present tipple with but slight interference to present production.

Why not let one of our engineers look over your equipment and explain how you can now utilize the Rheo process and thus modernize your plant facilities with an expenditure that will be quite within the range of your capital structure.

KOPPERS-RHEOLAVEUR COMPANY

Koppers Building, Pittsburgh, Pa.
Sales Offices, Lincoln Building, New York, N.Y.
Sales Office and Laboratory
Coal Exchange Building, Wilkes-Barre, Pa.



INVESTIGATION TESTS DESIGN CONSTRUCTION





"One-Man Control"

Automatic Car-Dumping Equipment

*is your answer
to the question,*

"How Can We Cut Costs?"

The two pictures on this page show a typical Nolan "economy" installation with everything—handling and dumping—done by one man. This installation is an arrangement of one Chain Type Trip-Feeding Unit, one Automatic Gravity Cradle Dump, and one Automatic Chain-Type Trip Maker. This set-up can handle the tonnage of very large operations and requires no attention whatever other than the uncoupling of loaded cars and coupling the empty trip.

The units are so placed that both of these simple operations are done beside each other by one man who removes the car checks and, in addition, may also record the car weights.

. . .

The full line of Nolan "one man control" Automatic Car Handling Devices includes Rotary Car Dumpers; Automatic Gravity Dumps; Automatic Cagers; Automatic Dump Feeders for Rotary Dumps, Cross-Over Dumps and Kick-Back Dumps; Mine Car Retarders; Chain Hauls; Cage Landing Chairs; Automatic Shaft Gates; and Car Pushers, steam, air and electric.

. . .

Be sure to visit Booth No. 524 at the A. M. C. Coal Convention and secure the new Nolan Mine Car Dumping and Control Catalog.

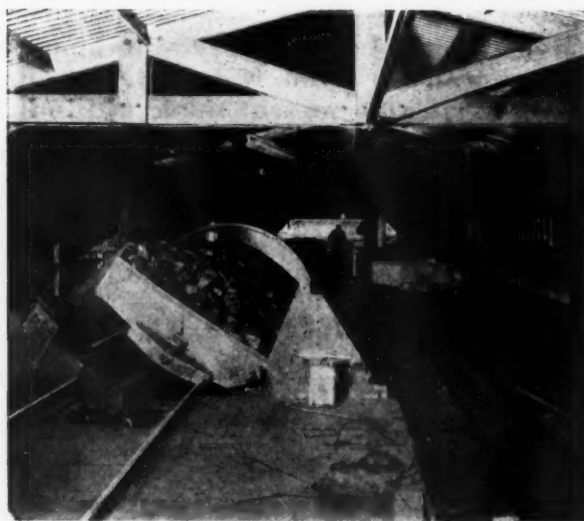
. . .

**THE MINING SAFETY
DEVICE COMPANY**

BOWERSTON
OHIO



The Nolan Automatic Gravity Dump receiving cars from the Nolan Chain-Type Trip Feeder. The dumping is entirely automatic and each car is then released to the kick-back and the Nolan Automatic Trip Maker.



The Automatic Trip Maker is shown above at the right. It receives the cars from the kick-back and builds up the empty trips, delivering each car to the proper point for coupling.

From FACE to TIPPLE

there is a

Bethlehem Steel Tie *for every location*

HEAVY mine locomotives and track-type cutting and loading machines may be used with safety on track laid with Bethlehem Steel Mine Ties. These ties hold the track true to gage and in alignment and prevent spreading or rolling over of the rails, thus considerably reducing the possibility of derailments.

Bethlehem No. 2 Steel Mine Ties may be used to advantage in rooms where their light weight and shallow depth make installation extremely easy.

Bethlehem No. 3A Steel Mine Ties are suitable for entryways and headings where light gathering locomotives are used.

Special Bethlehem No. 2 or 3A Switch Ties and interlaced Standard No. 2 or 3A Steel Ties save time and labor in laying switches.

Bethlehem Steel Rail Extension Ties, used to extend temporary track close to the working face, have four movable clips which hold upright or inverted or extension rails in position.

Keystone No. 6 Steel Ties are suitable for use in main-haulage track with rails weighing from 40 lb. to 60 lb. per yard. Keystone No. 9 Steel Ties are similar to Keystone No. 6 Ties, but are for use with heavier rails.

See these ties

*at The American Mining Congress Exhibition in
Cincinnati, Ohio, May 2 to 6, inclusive*

Booth 600



BETHLEHEM STEEL COMPANY

General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Cleveland, Detroit, Cincinnati, Chicago, St. Louis.

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Portland, Los Angeles, Seattle, Honolulu.

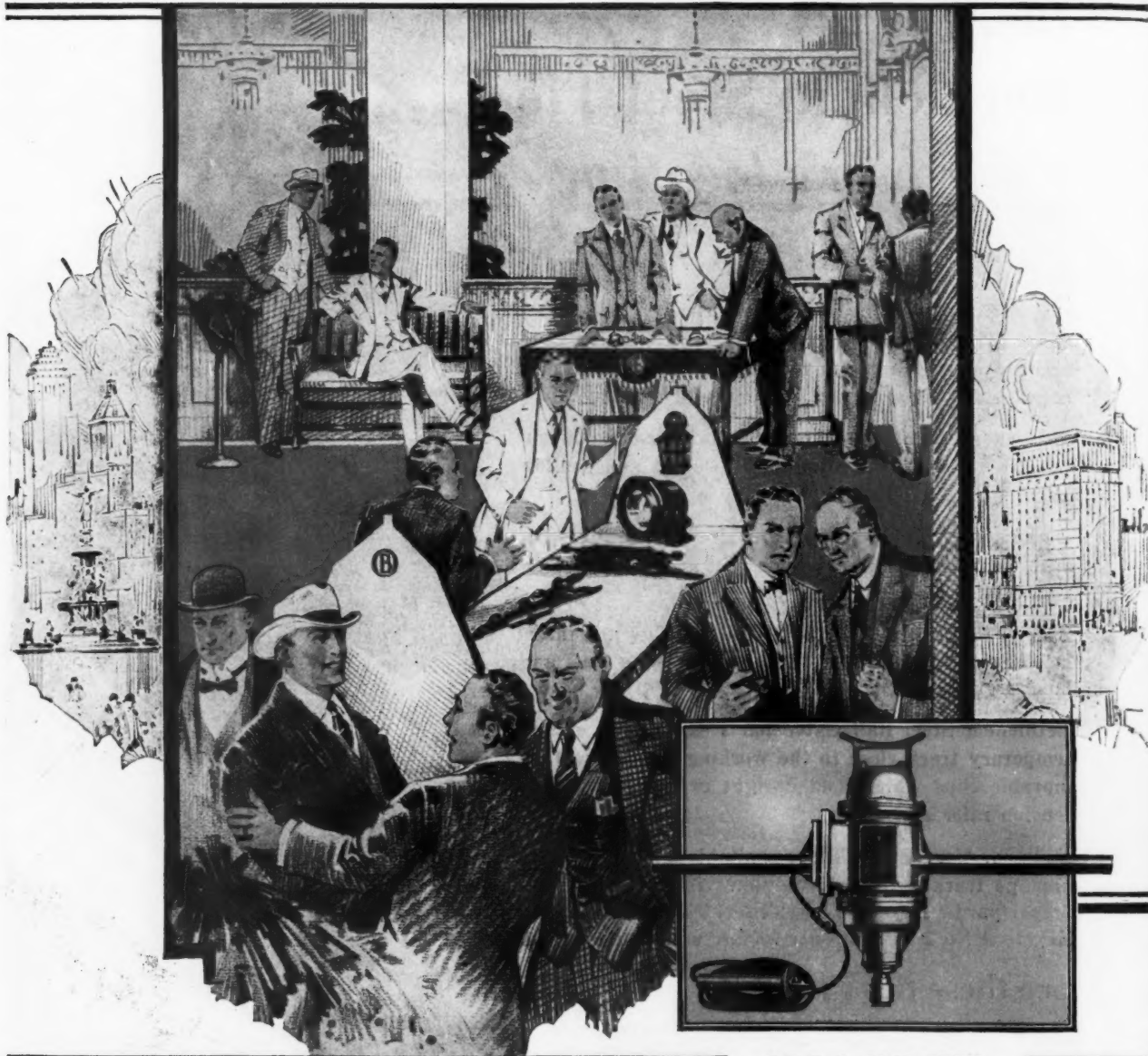
Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City.

BETHLEHEM

for May, 1932



The Highway to Profits *Start ~*



O-B D. C. COAL DRILL

The latest member of the O-B Family. Here's a chance to cut drilling costs. The drill is exceptionally sturdy and light in weight. It will sink more shot holes per hour than you ever thought possible. Are you satisfied with your present drilling methods? Perhaps they could be improved. Drop in to the O-B Booth and look this drill over.

O-B WILL BE AT SPACES 412 - 513

Trolley Materials

- Rail Bonds

- Locomotive Equipment

- Porcelain Insulators

- Safety Devices

- Motor Starters

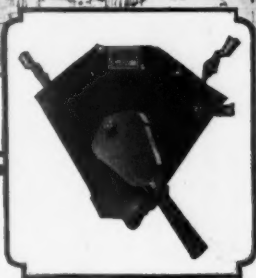
for Many Men May from Cincinnati

THE past few years have witnessed a more universal recognition of the fact that gigantic production and impressive sales figures, of themselves, are not representative of business success. Without the element of net profit, sales and production figures are meaningless. Profit is the life blood of industry.

Like others, the mining industry is vitally concerned with the question of "profits". The air of this year's Convention will be charged with the query, "How can business, at a profit, be done under present conditions?" Lecture halls will ring with suggestions and experiences. The exhibit floors will hold many ideas for "production and sales at a profit". The O-B *Booth is particularly attuned to this sentiment of mining profit. There will be experienced men to illustrate with specific cases how the many O-B Safety and Control Devices have contributed mightily toward assuring profitable production.

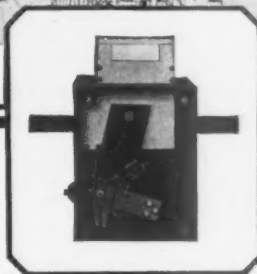
The Highway to Profits for many may start from Cincinnati and this year's Convention.

* There will be a complete display of O-B overhead line materials and rail bonds. These small devices assume great importance in promoting profits under present mining conditions. Come and see how these every-day-necessities can be made to work harder to increase the profit-margin.



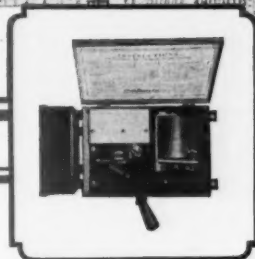
O-B SAFETY SWITCH

This switch is protecting hundreds of men who disconnect heavily loaded D.C. circuits. Accidents are prevented, and labor compensation costs are reduced. Ask about these savings when at the O-B Exhibit.



O-B CIRCUIT BREAKER

If given a trial, this switch will control peak power demand charges, and also protect locomotive motors. There is a story in this device that is worth getting.



O-B MOTOR STARTER

Hundreds of armatures have been saved by the protection of this device. Countless and needless restarting steps have been avoided and turned to productive labor by its automatic features. Perhaps this could be duplicated on your property.

OHIO BRASS COMPANY

Mansfield, Ohio, U.S.A.

Canadian Ohio Brass Co. Limited  Niagara Falls, Ontario, Canada

New York • Philadelphia • Boston • Pittsburgh • Chicago • Cleveland • St. Louis • Atlanta • Dallas • Los Angeles • San Francisco • Seattle

A NEW MEANS OF *INSURING* GREATER EFFICIENCY
AND REDUCING OPERATING COSTS

R

*Power savings on every ton—increased
efficiency and adaptability—*

Saves right from the start—

Without cost or obligation on your part—!

VISIT OUR BOOTH
No. 121
at the Mining Convention,
Cincinnati
May 2nd to 7th, 1932

ROBINSON VENTILATING CO.

ZELIENOPLE, PA.

***The road to greater profits is
served by West Virginia track work***

Rails and acces-
sories, frogs,
switches, steel ties
and special track
work in stock for
prompt shipment.

Write for Catalog
"C."

See our Booth No.
420, at Cincinnati

THE



WEST VIRGINIA
RAIL COMPANY

HUNTINGTON, W. VA.

Why we are selling **PREFORMED WIRE ROPE** *in ever increasing quantities*

During our 86 years in the wire rope business, we have developed many types of wire rope in order to meet severe and exacting demands of wire-rope-using equipment and machinery.

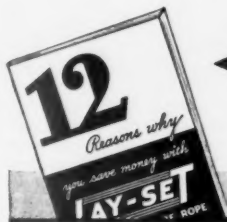
But prior to the perfection of the preforming process, there had been no basic improvement in wire rope. So long as wires and strands were forced to hold their helical shapes against a constant tendency to straighten out, there was internal stress—which in combination with normal bending stresses—was decidedly destructive.

Internal stress is eliminated in LAY-SET by preforming the strands and wires to the exact helical shape they assume in the finished structure. Strands and wires lie naturally in position, giving perfect strand balance—which greatly reduces probabilities of "high" and "low-stranding." Slippage on the drum is lessened, which is another of the many reasons for the longer service and better efficiency of LAY-SET Preformed Wire Rope.

While you may be receiving better satisfaction from Hazard non-preformed wire rope than from other brands of wire rope, you will obtain *still greater* service from LAY-SET Preformed Wire Rope of the same grade and construction.

HAZARD WIRE ROPE COMPANY WILKES-BARRE, PENNSYLVANIA

New York Pittsburgh Chicago Denver Fort Worth Los Angeles
San Francisco Birmingham Philadelphia Tacoma



MAIL COUPON TODAY FOR YOUR COPY...

An interesting booklet which explains and illustrates 12 advantages of LAY-SET Preformed Wire Rope. Every wire rope buyer should read this booklet before ordering another foot of wire rope.

HAZARD WIRE ROPE COMPANY
Wilkes-Barre, Pennsylvania

Send me by return mail your booklet entitled, "12 Reasons Why You Save Money with Lay-Set Preformed Wire Rope."

Name _____
Address _____
Company _____

MAIL TODAY

(Write on margin type of service).

LAY-SET SAVES YOU MONEY

BECAUSE IT GIVES MUCH LONGER SERVICE

LAY-SET gives service which averages between 30% and 300% longer than given by non-preformed rope of the same grade and construction, the variation depending entirely on the nature of the work and type of equipment.

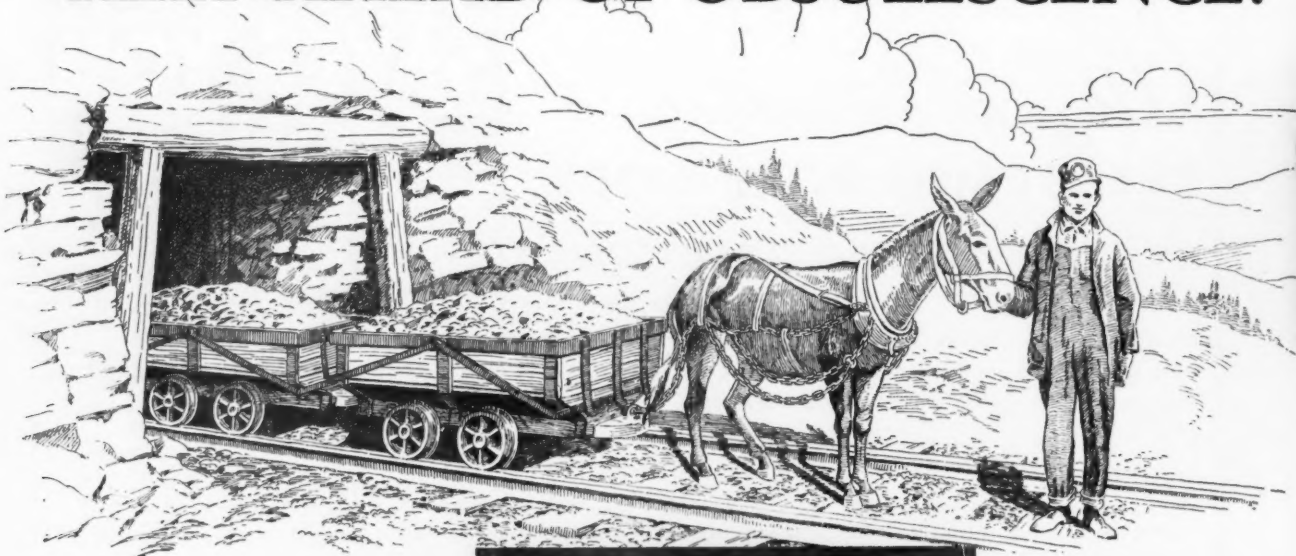
NOTE THE HELICAL SHAPE OF THE REMOVED STRAND



This illustration is made from an honest unretouched photograph. Note how you can remove a strand. You can turn it end for end and fit it back into position, which demonstrates the perfect balance of LAY-SET strands.

Note also that the ends need no seizing—there is no internal stress. Strands and wires lie naturally in position, free and relaxed.

KEEP AHEAD OF OBSOLESCENCE!



"IN 1919 we find 888,824 hp. in electric motors receiving purchased power, and in 1929 this has increased to 2,826,000 hp."

From the most recent publication of the United States Census Bureau

Significant indeed are these figures, for they emphasize the growing importance of electricity in modern mining.

To-day, there are probably few industries more dependent upon electric power than mining. And to-day finds General Electric ready, as always, to meet every electrical need—above ground or below, in topworks or mine—with dependable, proved equipment.

Here are just a few of the many devices designed by General Electric to help you reduce operating costs. Consider also the advantages of G-E equipment as applied to modernized ventilation; power generation, and distribution; and to the many devices of mechanized mining—scraper hoists, loaders, conveyors, etc.—in short, for any modern mining operation. Keep ahead of obsolescence; let G-E engineers help plan your cost-cutting campaign.



SAVE money and time, and speed up production with G-E modern hoisting equipment—either a-c. or d-c. and in any size. G-E engineers can analyze your hoist power requirements and recommend not only the proper electric equipment, but also the most efficient cycle of operation



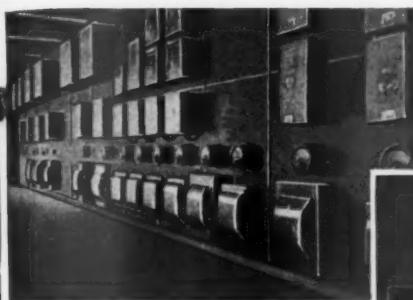
SAVE by avoiding accidents. General Electric manufactures a line of explosion-proof motors and controllers designed to meet the requirements of the U. S. Bureau of Mines for equipment permissible for use in gassy mines



SAVE on your power bills by installing synchronous motors on pumps for the improvement of power-factor and voltage conditions. G-E synchronous motors also give you the saving incident to high efficiency, low maintenance, and minimum space requirements

GENERAL

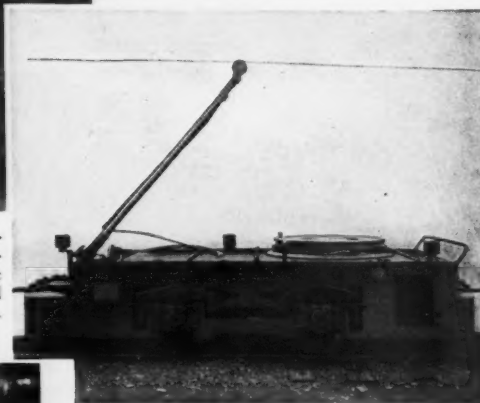
SAVE WITH G-E EQUIPMENT



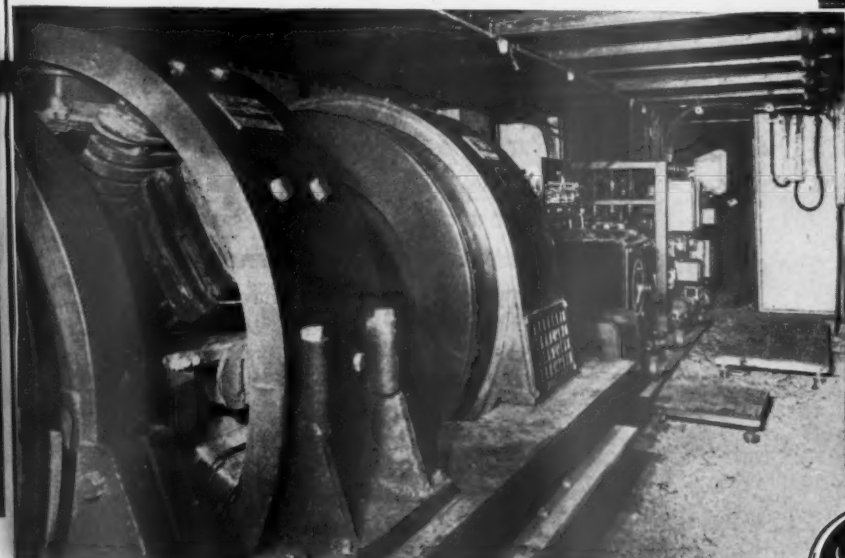
SAVE by modernizing your control . . . and increase safety. Avail yourself of greatest protection for motorized machines, and the convenience of group installations, by specifying G-E control. A complete line of modern control equipment for all types and capacities of motors is at your service



SAVE money through improved power-factor resulting from an installation of G-E capacitors. High savings have been reported by many plants using these modern equipments. General Electric offers a standard line of capacitors in capacities from 1 to 3000 kv-a.



SAVE on haulage by modernizing your haulage system with G-E locomotives, available in trolley or storage-battery types in all popular sizes, and of standard or "permissible" construction



SAVE time and installation expenses by utilizing G-E "substations on wheels"—complete, portable substations that assure plenty of power when and where you need it, without excessive copper losses. The entire outfit can be moved and installed in five hours . . . think what this means in case of emergency!

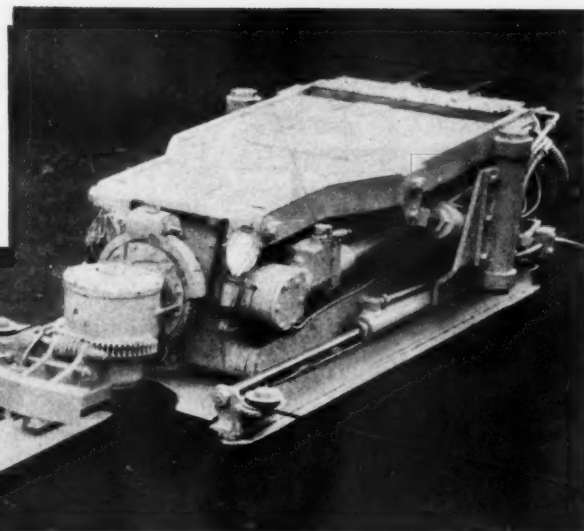
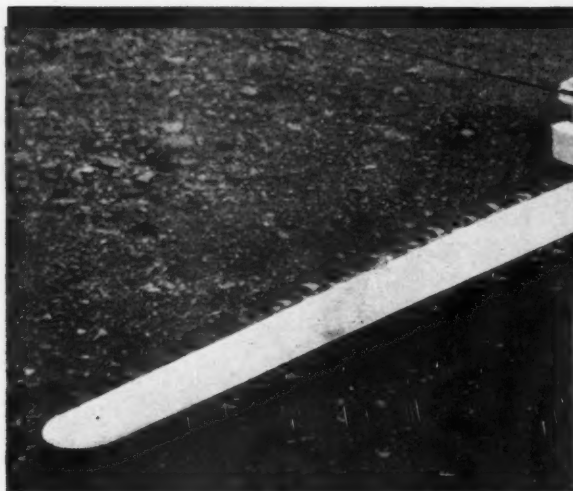


SAVE time, reduce effort, and cut costs by operating gates, brakes, valves, etc., with G-E Thrustors. The G-E Thrustor is an electric device which exerts a smooth, straight-line, powerful stroke. Have you received a copy of Bulletin GEA-1262B describing Thrustors and their uses?



E L E C T R I C

YOUR
MINING PROFITS
CAN BE INCREASED!



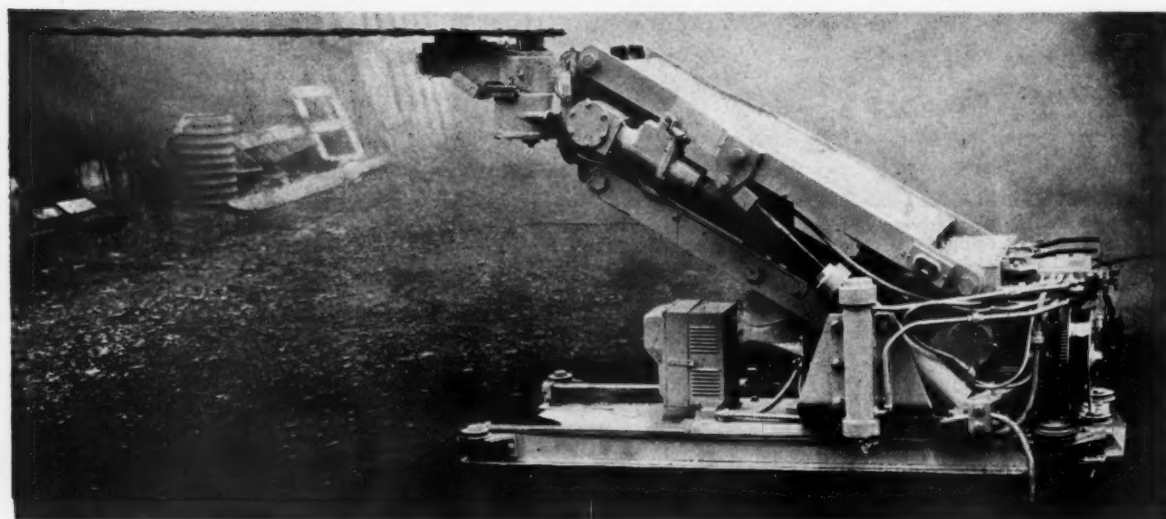
BECAUSE—
SAWED COAL
(POWDERLESS MINED)

COSTS LESS ■ SELLS FOR MORE

COAL SAWS! Rapidly biting a thin, deep slot at the top and bottom of the seam . . . following in quick succession with vertical incisions to form solid blocks of coal . . . easily dislodged by hydraulic pressure for convenient loading. That's the way the NEW JOY BROS. COAL SAW does it!

■ USE COAL SAWS TO ■
PRODUCE CLEANER, BETTER COAL
LESS FINES—MORE COARSE SIZES—MORE SALEABLE

JOY BROS. Inc. Marion, Ohio
U.S.A.



Coal Men—Attention!

This Year's
**COAL CONVENTION
PAPERS**

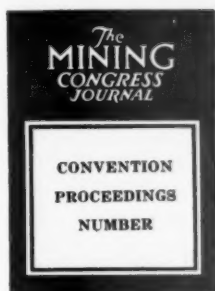
will appear *Exclusively* in the

**CONVENTION
▪ PROCEEDINGS ▪
N U M B E R**

of the

MINING CONGRESS JOURNAL

The Papers presented and discussed each year at the American Mining Congress NATIONAL COAL CONVENTION constitute, as a group, the most advanced Coal Mining practice to date. They form the finest current reference work obtainable on the subject of Coal Mining. They are practical, useful, and of utmost value to every practical Coal Operating Man. This year these exclusive, copyrighted Papers *will not* be printed separately as formerly. They will be FREE as usual, but will be obtainable ONLY in the special CONVENTION PROCEEDINGS NUMBER of the Mining Congress Journal, which will be ready June 15. Fill out the coupon below for YOUR FREE COPY and either leave it at Mining Congress Journal Booth No. 500 or mail it to the Washington office.



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Washington, D. C.

Please send me a copy of the CONVENTION PROCEEDINGS NUMBER of
The Mining Congress Journal.

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YOU CAN CUT COSTS by REDUCING ACCIDENTS!

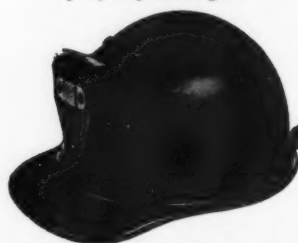


For Example

Better illumination means not only greater safety but better mined products, with this new 55 Candle Power Edison Model K Electric Safety Cap Lamp.



M-S-A Mine Car Safety Blocks will reduce foot and body injuries and property damages.



Skullgards will protect your employes against head injuries.

Be Sure To Visit
Booth 400
If You Attend the
American Mining
Congress
Convention

Our Representative
Will Gladly
Arrange
Demonstrations
At Your Mine
Any Time!

Here's the Key to the Situation:

PROPERLY PROTECT AND EQUIP YOUR MEN WITH THE SIMPLE, INEXPENSIVE EQUIPMENT AVAILABLE, UNDER THE DIRECTION OF A WELL-ORGANIZED SAFETY DEPARTMENT. THE RESULTS WILL PLEASE YOU!

Mine Safety  *Appliances Co.*

Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

"EVERYTHING for MINE and INDUSTRIAL SAFETY"



*A Journal for the entire mining industry
published by The American Mining Congress*

The Regulation Program

HEARINGS have been going on on the Davis Kelly Bill, and coal operators have been vehement in their opposition. As has often been iterated, and reiterated, the coal industry desires to be let alone. It stoutly maintains its independence, and its capacity to solve its own problems. The maintenance of this principle in the face of continued inability to meet the situation, complicated by a depression, while indicating the fighting trim of this great industry, fails to convince the doubting public of its ability. There is a steadily rising tide of feeling that the "government must regulate coal."

And if coal, why not copper, and lumber and all the natural resources that have found themselves involved in a bitter fight for their existence against keen competition and internal battles? Great bodies move slowly. And certainly coal may be termed a "great" body with its 6,000 mines, and 500,000 miners, and its almost unlimited ability to expand with demand. Why should we expect such

a gigantic industry, inherent with the weaknesses of the giant, to solve its problems over night? And why, pray, should we assume that the political body is more competent to solve those problems than the men who have invested thousands and thousands of dollars in their development? It is simply that coal lends itself admirably to politics; it makes a splendid background, it is a universal language, it is a decidedly human industry with the welfare of its workers ever on the front page. It offers splendid political fuel and it also opens the door to political control of all natural resources.

Practical stabilization is already well on its way to save the coal industry from the political control threatened. Research utilization, and common-sense will soon have coal on its upward path. Give it time. Nothing worth while was ever accomplished in a moment. Coal's increasing groans convince a politically prejudiced public that coal is incompetent. Find us a better example of an efficient public servant, at anything like the cost!

J. H. Cullerath

DOWN *with* TAXES!

Now is the time to get **ENTERPRISE Modern Low Type Large Capacity MINE CARS**. Their economical use will . . .

Cut out the tax of small capacity.

Cut down the tax of costly repairs.

Relieve the tax of frequent replacement.

Reduce the tax of excessive power bills.

Lessen the tax of frequent greasing.

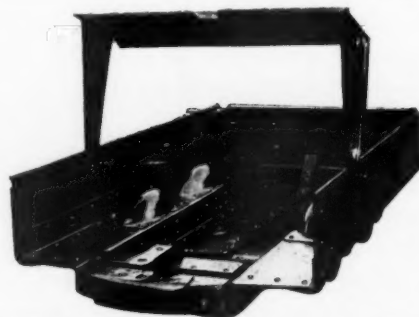
Diminish the tax of troublesome wrecks and derailments.

Lower the tax of depreciation.

Vote For

☒ **ENTERPRISE
MINE CARS**

*. . . and you vote for MORE
PROFITS from your operation*



THE profit-making car pictured above was designed by ENTERPRISE engineers to give the MAXIMUM ATTAINABLE CAPACITY for any given overall dimensions. This means fewer cars to meet your haulage requirements, fewer cars to repair, fewer cars to grease, less capital invested. Sturdy steel construction for long life, four floating axles give unusual trackability making derailments almost unheard of; cast steel boxings; special analysis annealed semi-steel wheels made for speed and hard service.

ENTERPRISE WHEEL & CAR CORPORATION

BRISTOL, VA.-TENN. — HUNTINGTON, W. VA.

ENTERPRISE ROLLER BEARING WHEELS ARE GOOD WHEELS

The MINING CONGRESS JOURNAL

MAY, 1932
VOLUME 18
NUMBER FIVE

Editorials

The Economy of Economies



WHEN the eighty coal men responsible for the development of the program for the Ninth Annual Convention of Practical Operating Men met at various points to arrange the papers, the theme uppermost in their minds was that of the "economy of modern practice." For eight consecutive years these conventions, under the auspices of The American Mining Congress, have given special attention to modern production methods through the use of machinery; these methods have been presented in detail; the equipment designed to bring about efficiency has been thoroughly described. Many operators are convinced that modernization is the road to ultimate stabilization of the coal industry. But they have wished to know just what results have been obtained by those companies that have spent thousands of dollars in modernizing.

The Program for the Ninth Annual Convention of Practical Coal Operating Men, found elsewhere in this issue, speaks for itself. Its whole theme is "the economy of economies." Just what will it profit a company to revise its power distribution system in accordance with modern practice? What can be gained by cleaning coal? Has the machine lived up to the prophecies made for it? And what is the economy of a thorough safety program?

The men sponsoring this program are the leaders in the industry; they have faith in the future of coal, and they are making their plans to meet the changing economic situation. The coal industry is here to stay. It remains for the companies themselves to decide whether they stay as a part of it. The meeting at Cincinnati, coupled with the Exposition held in conjunction therewith, offers the greatest possible service to the industry. The leadership already established by this meeting will go far to placing the coal industry on a practical stabilized basis.

A Great Machinery Mart



THE AMERICAN MINING CONGRESS offers during the week of May 2, at its Cincinnati convention and exposition, one of the greatest of services to the coal mining industry. A service alike to the coal producer and to the manufacturer of mining machinery. For at this central point an operator may view under one roof, in the short space of one week and at a minimum of expense, all of the latest machinery designed to help him meet the rising tide of competition. Equally, during that same period, the manufacturer may contact fully 90 percent of the purchasing power of a gigantic industry, at an expense that is infinitesimal

when compared with contacting that same market through field representatives.

At Music Hall again will be staged, in conjunction with the convention, a splendid array of equipment. And operating men, driven by stern necessity, will find the solution there of at least some of their problems. The inventor's skill has opened a new door to the coal producer. The loading machine, conveyor, and the utilization of power in production have changed the picture of coal mining. They are here to stay, and with them the imperative need for modernization of all mining methods and practice.

A great machinery mart . . . the only one of its kind in the world . . . opens its doors May 2, and welcomes the coal industry.

Gold, and the World's Business



THE statement is frequently made that the eleven billion dollars worth of gold in the world does not furnish sufficient support for enough money with which to do the world's business. We believe this to be true as it relates to world business, even though at this time it may not be as it relates to the business of the United States.

Before the World War the business of this country was done with a gold supply of one and three-quarter billion dollars. We now have approximately three times that amount of gold—a growth in domestic gold supply at a ratio much greater than the business requirements of our country. If we would look to gold as a source of our own business difficulties we must conclude that too much gold has been the cause rather than too little. This view, however, is very narrow because no matter how nation-minded we may be, we must admit that foreign markets are essential to our industrial progress. It is generally conceded that in normal times we must sell at least 10 percent of our production in foreign markets if our own production machinery is to be kept in full operation. In other words, our home markets consume 90 percent of our usual production of goods, but if the other 10 percent cannot find a foreign market it must be absorbed at home, and thus affect the price of all competing commodities. This does not mean that we cannot consume a considerably greater amount of imports than is represented by the 10 percent which we should export. Our national wealth may continually grow on the profits derived from the production of 90 percent of our domestic requirements to an extent which will permit us to buy in foreign markets an amount equal or greater than our 10 percent exports. These imports may affect the balance of trade, but if the exports are normal and all of our industrial machinery is profitably

employed we are still prosperous. This condition may obtain in spite of the fact that we have more than our share of the world's gold while the progress of other nations and their ability to buy our surplus production is impeded by lack of a sufficient money medium. From our present experience we may justly assume that the surplus of gold does not prevent business depression and therefore we must assume that it is lack of confidence rather than the lack of gold. This same lack of confidence throughout the commercial world is responsible for our present business condition and we are, therefore, urged to inquire as to what is the cause of that lack of confidence which has sent money into hiding—which has prevented the purchase of goods and supplies—which has prevented the initiation of new enterprises. It may be that this quest will bring us to the discovery that an excess of credit money based upon a too small reserve of gold is responsible for that loss of confidence which has so disturbed business conditions.

Solvency

A HALT has been called on the practice of increasing additional obligations without regard to definite plan to pay or to the position of the credit structure of the United States. Secretary Mills has told the Ways and Means Committee in public hearing that the \$3,600,000,000 which the nation gained in retiring the 1919 debt of \$26,000,000,000 to \$16,000,000,000 has been absorbed by deficits and that now the budget must be balanced by taxation and other revenue sources and not by borrowing. It is the solemn recommendation of the able Secretary of the Treasury that borrowing cease at the end of the fiscal year 1932—to maintain unimpaired the credit of the United States. Surely every mining man will agree with so strong and honorable an expression. Mining has paid and will now pay, within its capacity, for the functioning of economically conducted, good government. It is most regrettable that the necessary revenues must be taken from constructive, creative business activities at this very trying time in the natural resource industries and the tax-taking legislators should bear this well in mind. Mining men are by long trial and habit accustomed to fighting and carrying on in silence. There is danger that the tax takers may remove too many feathers from the goose and rue the result too late.

Coal and Electric Power

A RECENT compilation of the current statistics of the Electric Light and Power Industry issued by the National Electric Light Association present very many facts which are startling to those who have not followed the industry with care.

To begin with the value and plant equipment of the industry in the United States is estimated at \$12,500,000,000. During the month of August, 1931, the industry produced more than seven billion k.w. hours; only one-third of which are produced by water power. Of the seven billion k.w. hours produced more than one billion is lost in transmission.

During the twelve months ending August 31, 1931, fuel produced nearly fifty-nine billion k.w. and water power twenty-seven billion k.w. During that year fourteen billion k.w. hours were lost in transmission, most of which could have been avoided by the use of larger transmission wires. Out of eighty-seven billion k.w. hours

produced seventy-three billion k.w. were sold to the consumers for a consideration of one billion, nine hundred eighty-three million dollars.

According to this report 70 percent of the total number of homes—housing 85,610,000 persons—are electric lighted. This power was delivered over two hundred and eighty million miles of wire carrying a voltage of 11,000 or greater. Incidentally these figures question the sincerity of those public officials who are meeting public attention of the criticism of the water power interests, while less than one-third of the electric power is created by water power. It would seem that this development only serves to make possible the cheaper power to the consumer rather than to be a necessary adjunct to electric power distribution. If two-thirds of the power used in this country can be developed from coal on a competitive basis it would not be too great a strain upon the imagination to assume how all of it could come from the same source. In view of the fact that rates to be charged by the Public Utilities Commission can be controlled locally by each of the separate States, the danger to the public does not seem so great as some of our agitating friends would try to make us believe.

Conservation

A CLEVER writer recently said "words are the tools of my profession," and he naively added, "I admit that I am a master craftsman." His many admirers endorse these sentiments. Many great accomplishments of national and international importance have been based upon a single campaign word. The word "conservation" has played a bitter part in the history of this country. It has been made to cover a multitude of sins. Its real meaning is "the highest use and least possible waste." Its importance has an especial application to our wasting industries. Its practical application in this country has been the adoption of a Federal leasing system of the power and fuel resources of the west. Since its adoption the advancement of the public land states has been greatly retarded. Alaska was frozen stiff. In the States the effect was not quite so deadly because enough of these natural resources had already passed to private ownership through which production could be continued. This was an entire abortion of the word "conservation," but the public was so misled that it believed the leasing law was a complete fulfillment of the need for conservation.

In various forms and plans the real need of conservation has been stressed during recent years. Our coal reserves have always been wasted. The fact that coal for this and all future generations is immediately available for production has lessened the public interest on the need of conservation in that field. In petroleum a lack of knowledge as to a continuous production sufficient to meet the public requirements has brought attention to the importance of preventing wastage in that field, and to the various remedies suggested—mostly through government control. As a matter of fact all wasting industries want to adopt the principals of conservation. These comprise the natural resources. Owners of these resources have the highest interest and are best qualified to conserve their own property. This can only be accomplished by agreement between owners to limit production to meet public requirements. The consumer has a moral right and the owner a selfish interest to ask for such conservation as will provide a supply for the one and a profit for the other.



GEO. E. McFADDEN
National Chairman of the Program Committee
NINTH ANNUAL COAL CONVENTION

THE NINTH ANNUAL COAL CONVENTION

PROGRAM

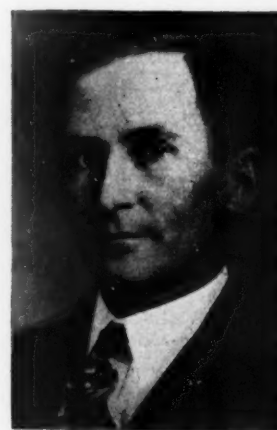


Geo. F. Campbell

A COAL INDUSTRY fighting desperately against the depression; striving to care for its unemployed; wrapped in the bitter struggles of a government to unburden itself; fighting for or against the Davis-Kelly and Lewis bills; trying to settle strikes and disorders; placating not only fellow members, but also cooperative industries; and, at the same time, turning aside from personal difficulties to join in the discussion of practical operating problems—that is the picture before the Ninth Annual Coal Convention. Mechanization; timber preservation; strip mining; safety and accident prevention; electrical maintenance; cleaning economies; and problems of organization, personnel, and morale, present some of the questions which the ablest men in the coal industry will attempt to solve during the convention and exposition to be held under the auspices of the American Mining Congress, Music Hall, Cincinnati, Ohio, May 2 to 6, inclusive.

A splendid program of many of the industry's problems and their possible solution has been arranged for under the personal supervision of Mr. George C. McFadden, assistant vice president, Peabody Coal Co., and a distinguished group of operating men, who have cooperated with him on the Program Committee.

COMMITTEE



Chas. Gottschalk



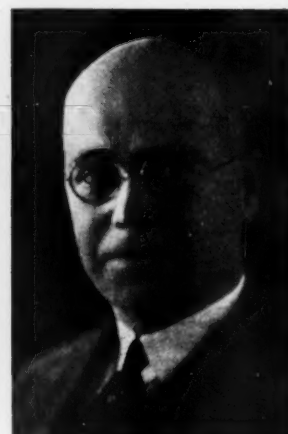
S. D. Dimmick



P. C. Graney



Thos. G. Fear



Wm. P. Cayton

PROGRAM



D. A. Thomas



Wm. Moorhead



Harry La Viers

Since 1923 the American Mining Congress has staged similar conventions and expositions. Nine consecutive, successful years have marked their efforts—years which have seen the embryo grow into a nation-wide enterprise. Each year has been marked by steadily growing interest, greater attendance, larger exposition, and a wider appreciation of just what such a meeting can do for the coal industry. Much should be gained this year—one of the worst in the history of the country.

It is evident to the Program Committee that this is an accepted fact. Hotels are already making reservations for a capacity crowd, and the demand for the return-fare-identification-certificates, with their reduced rates, is as great as that of previous years. The 1932 convention will live up to the reputation made by its predecessors.

The program will consist of nine major sessions, beginning Monday morning, May 2. The convention will officially open at 8.30 a. m. with the registration of delegates. The lapsing two hours, between registration and the opening session, will give delegates an opportunity to view the exhibits, visit with their friends, and become settled in their hotels.

The first session, beginning at 10.30 Monday morning, will present and attempt to bring up to date information on various phases of the industry, and will present some extremely interesting information concerning the questions and problems of administration. Shortly after the close of the session a luncheon will be given the Board of Governors of the Coal Division of the American Mining Congress.

The program has been arranged with its basic principle idea that of economy. For instance, a full session on "The Economies of Mining" is to be presented Monday afternoon. "Economies to Be Realized Through Proper Power Distribution," "Economies of Treated Mine Tim-



E. W. Judy



D. E. Ingersoll



J. S. McKeever



H. A. Treadwell



C. A. Griffith

COMMITTEE

PROGRAM



H. B. Husband



P. C. Thomas



B. H. Stockett

bers," "Economies Through Welding," "Economies Through New Types and Uses of Materials," and other papers will also be presented during the course of the convention. An interesting paper, "Economies to be Affected by Coal Cleaning," is also to be given, which will discuss such vital and interesting questions as: what will be its profit if a company does clean its coal; can it be sold for a higher price; what are the reasons back of a strictly captive mine cleaning its coal; and in dollars and cents what does it mean to the industry? Every possible means has been taken to point all thought toward economy in the industry. Many practical illustrations of methods followed and their progress during the past year in this field are to be presented.

The question of economy as pertaining to the industry will need all of its allotted time on Monday afternoon to discuss.

Tuesday, May 3, will be given over to Room and Pillar Mining, Strip Mining, and Safety and Accident Prevention. A series of lantern slides will feature the morning discussions on the topic of Mining Long Wall Panels. The question of safety and accident prevention is always one of vital importance to the industry, as well as being intensely interesting. During the afternoon such questions as: Making Pillar Falls; Blasting; and Discipline, as it relates to safety, will be presented and discussed.

Electrical maintainence, problems of distribution, and questions and progress made in the field of mechanization will be offered and discussed on Wednesday, May 4.

Thursday morning presents a high light of the convention with the presentation of the paper "Economies to be Effectuated by Coal Cleaning," by Mr. Byron M. Bird, chief construction engineer, Battelle Memorial Institute. Immediately following the presentation of this paper will be a



S. Tescher



E. J. Newbaker



T. C. Mullins



J. Wm. Wetter



Paul Weir

PROGRAM



C. B. Pryde



M. D. Cooper



A. D. Jessup

discussion of the question of five prominent operators, each using a special cleaning system. Anthracite safety problems, protective mine clothing, signal systems, and questions concerning personnel, administration, and morale will round out the afternoon discussions.

The subject of a single topic of nation-wide importance, "The Real Coal Problem," has been assigned to Friday, the final day of the convention and exposition. The question, "The Real Coal Problem," is to be presented by the Hon. Flem D. Sampson, ex-governor of Kentucky. Such questions as the Davis-Kelly bill and the Lewis bill, with their questions of Government control—and the subsequent cry of operators and manufacturers alike for a leader to bring about a stabilization of the affairs of the industry, will be heard. This session marks the entrance of the convention into a new field of discussion, as the Program Committee left its confines of practical operating questions in answer to the wide spread demand for such a discussion. "The Real Coal Problem" will offer new and constructive thought—and perhaps combined leadership in finding that now famous corner of Mr. Hoover's.

The Program Committee is as follows:

NATIONAL CHAIRMAN

Geo. C. McFadden, assistant vice president, Peabody Coal Co.

PENNSYLVANIA, NORTHERN WEST VIRGINIA-OHIO DISTRICT

M. D. Cooper, district chairman; P. C. Thomas, L. E. Young, R. M. Shepherd, A. J. Musser, E. W. Joy, Newell G. Alford, J. J. Geary, J. Wm. Wetter, E. J. Newbaker, Geo. J. Krebs, D. L. Brown, G. Webb Shillingford, Thos. G. Fear, Wm. Emery, Jr., Ezra Van Horn, W. C. State, A. D. Carlton, F. W. Braggins, W. L. Robison, Wm. P. Cayton.



Ira Clemens



J. A. Long



Ezra Van Horn

COMMITTEE



C. E. Abbott



L. E. Young

PROGRAM



A. J. Musser



Carl J. Fletcher



E. H. Seunder

ILLINOIS-INDIANA DISTRICT
H. H. Taylor, Jr., district chairman; J. D. Zook, P. S. Pfahler, Chas. F. Hamilton, A. C. Callen, Paul Weir, Geo. F. Campbell, Carl T. Hayden, T. C. Mullins, Chas. Gottschalk, T. J. Thomas, H. A. Treadwell, Wellington O'Connor, W. F. Davis, W. J. Jenkins, Carl J. Fletcher, David Ingle, C. G. Hall.

SOUTHERN WEST VIRGINIA DISTRICT
L. N. Thomas, district chairman; H. S. Gay, Jr., H. D. Smith, P. C. Graney, H. B. Husband, Edw. Graff, L. T. Putnam, J. S. McKeever.

VIRGINIA, KENTUCKY, TENNESSEE DISTRICT
G. E. Smith, district chairman; L. C. Skeen, Harry La Viers, C. A. Griffith, Lee Long, J. D. Rogers, C. F. Richardson, W. A. Ellison.

SOUTHERN DISTRICT
J. A. Long, district chairman; D. A. Thomas, C. E. Abbott.

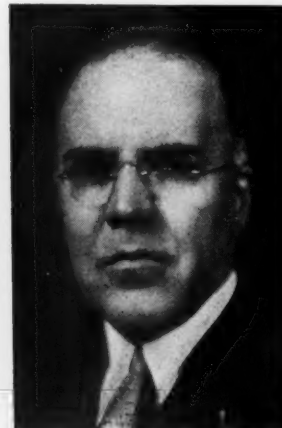
WEST CENTRAL DISTRICT
K. A. Spencer, district chairman; V. C. Robbins, Ira Clemens, L. Russell Kelce.

FAR WEST DISTRICT
Otto Herres, district chairman; S. Tescher, G. C. Davis, F. W. Whiteside, E. P. Lucas, Gomer Reese, Geo. B. Pryde, Wm. Moorhead, G. A. Knox.

ANTHRACITE DISTRICT
A. B. Jessup, H. D. Kynor, D. E. Ingersoll, B. C. Osler, T. D. Lewis, B. H. Stockett, John Conlon, S. D. Dimmick, E. H. Suender.



V. C. Robbins



Newell G. Alford



T. D. Lewis



Geo. E. Smith



H. D. Smith

COMMITTEE

PROGRAM



F. C. Pfahler



L. C. Skeen



C. T. Hayden



H. S. Gay, Jr.



H. H. Taylor, Jr.



W. J. Jenkins

COMMITTEE



J. D. Zook



W. F. Davis

ENTERTAINMENT FEATURES

A unique and novel breakfast tendered to the Program Committee will be given Wednesday morning in the form of a Scotch Breakfast in honor of Mr. George C. McFadden. This is only one of the many interesting offerings to be made by the Program Committee in the way of new and novel forms of entertainment. Each day will be marked by at least one bit of entertainment for the delegates.

Monday night, May 2, offers a reception in honor of Mr. George C. McFadden, national chairman, and members of the Program Committee. During this reception a sound film and stage show is to be presented by the Westinghouse Electric and Manufacturing Co. and the Koppers Co.

"Electrons At Work and At Play" will be the subject of a demonstration of scientific apparatus to be given by Dr. Phillips Thomas, of the research laboratories of the Westinghouse Co., of Pittsburgh. For an hour Mr. Thomas will entertain the delegates with demonstrations of such scientific apparatus as the "stroboglow," by means of which it is possible to examine any kind of rotating or vibrating machinery in detail as though it were stationary under the eye; the magnetic "yes man," a new alloy which can be demagnetized, magnetized, and reversed in polarity by the earth's field alone; a modern "William Tell," by which light beams, electric eyes, and relays replace yew bows and menacing arrows of yesterday, though still effective in knocking an apple from a boy's head.

"Romance in the Common Places" will be the subject of a lecture by Prof. Norman McClintock, of Pittsburgh, supplemented by motion picture films, showing the experimental farm of the Koppers Research Corp. and studies on the useful as well as common insect pests. In

PROGRAM



K. A. Spencer



David Ingle



Edward Graff

illustrating methods of attacking farm problems, the film will show how coal derivatives may prove an important ally to the farmer. Some plant pictures, never before shown on the screen, will also be seen. Another film to be shown by Prof. McClintock will illustrate the feeding of baby humming birds, the nesting of wild fish in a brook, wild turkeys, and a study in song sparrow psychology.

Tuesday night is to be turned over into the able hands of the exhibitors, who will feature their "Our Gang Night," under the direction of Mr. William Turnbull, of the Westinghouse Elec. and Mfg. Co. This is the time when all of the delegates gather for a rollicking evening of fun and mirth. Individual members of each of the exhibiting companies get together and offer something for the amusement of the spectators. Tap dancing, instrument playing, song, are all offered in the spirit of hilarity which has placed its mark on previous "Our Gang Nights."

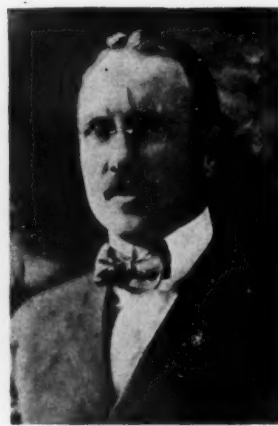
A wrestling match is to be presented Wednesday night, featuring the leading wrestlers in the middle west, under the auspices of the Cincinnati Sports Club. These are to be held at the Music Hall, which is to be turned over to that group for the evening.

The now traditional informal dinner, to be held in the Main Ball Room of the Gibson Hotel, will be offered Thursday night, affording perhaps the largest get-together of all. An unusual entertainment is to be offered by the General Electric Co., who will give, for the first time, a special program entitled "Magic vs. Science," under the direction of Mr. William Gluesing, of their research department.

This entertainment is divided into two parts: one, a special talkie film; and two, a stage demonstration of some new and entirely original material, never before presented



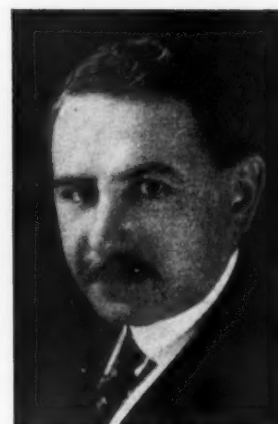
Lee Long



F. W. Whiteside



Gomer Reese



Geo. J. Krebs



C. F. Richardson

PROGRAM



A. C. Callen



Otto Herres



E. P. Lucas



Wellington O'Connor



B. C. Osler



W. L. Robison

by this company. The picture was produced in the company's motion picture studio at Schenectady with apparatus devised at its research laboratory, and the magician and scientist featured in the film is one of the company's employees. It is intensely interesting as well as instructive. The film, which takes only 12 minutes to run, reveals the distinctions between the clever deception of the magician and the simple sincerity of the scientist. For example, the wand of a magician mysteriously disappears from a folded handkerchief while the wand of the scientist glows transparently from end to end without any visible means of light. In the film the scientist explains the difference between his tricks and those of the magician. As the picture fades from the screen the curtain rises disclosing the magician on the stage in person together with a scientist, against whom he will be matched in a series of stage demonstrations. The scientist is a rival of the conjuror, who does things as startling as the magician's tricks, and puts the latter to the acid test.

A golf tournament, with the proper handicaps, will be played at the Twin Oaks Golf and Country Club as a final parting gesture on Friday afternoon. Boxes for games between the famous Cincinnati Reds and the Boston Braves can be arranged for Friday and Saturday afternoons. It is to be noted that both of these teams finished in the first division of their league last season and, due to prominent new faces on the present roster, are making strong bids to disrupt the St. Louis Cardinals from their precarious perch as World Champions. And let no one forget the most famous of all American races—the colorful spectacle of the Kentucky Derby, which is to be run on Saturday, May 7, and is reached by an easy trip across the river into the blue grass country of Kentucky.

COMMITTEE



T. J. Thomas



H. D. Kynor

Monday, May 2

10:00 A. M.

CHAIRMAN: P. C. THOMAS
Vice Pres., The Koppers Coal Co.

INTRODUCTION:

WARNER SAYERS
Vice Chairman, Cincinnati Chamber of Commerce

GEO. C. MCFADDEN
National Chairman, Program Committee

CHAS. C. WHALEY
Chairman, Manufacturers' Division

(1) ENGINEERING AS A FACTOR IN SUCCESSFUL OPERATION

By R. L. IRELAND, JR., Vice President, Hanna Coal Co.

(2) CASH—A COAL MINING IMPLEMENT

By NEWELL G. ALFORD, Consulting Engineer, Eavenson, Alford & Hicks, Pittsburgh, Pa.

(3) ECONOMIES AND SAVINGS THROUGH THE USE OF MECHANICAL LOADERS

By H. B. HUSBAND, Genl. Mgr. of Fuel Mine Operations, Chesapeake & Ohio Railway Co.

■ ■ ■

2:00 P. M.

CHAIRMAN: J. D. ZOOK
Pres. and Commissioner, Illinois Coal Oprs. Assn.

(1) ECONOMIES TO BE REALIZED THROUGH PROPER POWER DISTRIBUTION

By CARL LEE, Elec. Engr., Peabody Coal Co.

DISCUSSION:
W. E. WOLFE, Clinchfield Coal Corp.

(2) ECONOMIES OF TREATED TIMBERS

By PAUL WEIR, Vice President, Bell & Zoller Coal & Mining Co.

DISCUSSION:
FRED A. GRAF, Union Pacific Coal Co.

(3) ECONOMIES OF WELDING

(a) ARC WELDING: *A. E. STEIGER, G. S., Pyramid Coal Co.*

(b) OXY ACETYLENE WELDING: *E. S. WADE, G. S., Windsor Power House Coal Co.*

(4) ECONOMIES THROUGH NEW TYPES AND NEW USES OF MATERIALS

By R. E. HOBART, Mech. Supt., Lehigh Navigation Coal Co.

Tuesday, May 3

10:00 A. M.

CHAIRMAN: I. N. BAYLESS
Asst. Genl. Mgr., Union Pacific Coal Co.

(1) ROOM AND PILLAR MINING WITH CONVEYORS

By R. H. MORRIS, Genl. Mgr., Gauley Mtn. Coal Co.

PROG

THE AMERICAN MINING CONGRESS PRACTICAL COAL Music Hall, Cincinnati,

(2) PORTABLE HOIST AS A HAULAGE AUXILIARY

By A. E. ROBERTS, Chf. Engr., Monroe Coal Mining Co.

(3) MINING LONG WALL PANELS WITH TOP CUTTERS AND CONVEYORS

By C. A. GRIFFITH, Vice Pres. and Genl. Mgr., Pruden Coal & Coke Co.

(4) STRIP MINING IN THE SOUTHWEST

By L. RUSSELL KELCE, Sinclair Coal Co.

■ ■ ■

2:00 P. M.

CHAIRMAN: THOS. MOSES
President, H. C. Frick Coke Co.

(1) MAKING FALLS SAFELY

By D. A. REED, Elkhorn Division, The Consolidation Coal Co.

(2) ACCIDENT PREVENTION—A VITAL PROBLEM

By LEE LONG, Vice Pres., Clinchfield Coal Corp.

(3) SAFETY IN BLASTING COAL

(a) CARBOX: *By J. E. JONES, Safety Engineer, Old Ben Coal Corp.*

(b) PERMISSIBLE: *By H. L. GRIFFIN, Chief Engr., New England Fuel & Transportation Co.*

Wednesday, May 4

10:00 A. M.

CHAIRMAN: F. S. PFAHLER
Pres., Superior Coal Co.

(1) AUTOMATIC OPERATION OF MINE PUMPING STATIONS

By K. L. KONNERTH, Elec. Engr., H. C. Frick Coke Co.

(2) ELECTRIC MAINTENANCE PROBLEMS

By B. H. MCCrackin, Maintenance Engr., Consolidation Coal Co.

DISCUSSION:
J. A. LONG, Woodward Iron Co.

(3) CARE AND RECOVERY OF SUPPLIES UNDERGROUND

By H. A. TREADWELL, Genl. Supt., C. W. & F. Coal Corp.

RAM

NINTH ANNUAL CONVENTION OPERATING MEN

Ohio, May 2-7, 1932

(4) PROBLEMS IN COAL MINE POWER DISTRIBUTION

By FRANK E. GLEASON, *Genl. Master Mechanic, United States Fuel Co.*

(5) AUTOMATIC PUMP CONTROL UNDERGROUND

By C. H. MATTHEWS, *Elec. Engr., Susquehanna Collieries Co.*

DISCUSSION:

JAMES HYSLOP, *Walter Blodsoe & Co.*

2:00 P. M.

CHAIRMAN: THOS. G. FEAR

Mgr. of Operations, The Consolidation Coal Co.

(1) LOW COSTS AND LOADING MACHINES

By W. J. JENKINS, *Pres. and Genl. Mgr., Consolidated Coal Co. of St. Louis*

DISCUSSION:

EDW. BOTTOMLEY, *Sheridan Wyoming Coal Co.*

(2) TONNAGE, LOADING AND DEVELOPMENT WORK WITH TRACK-MOUNTED MACHINES

By JOHN H. RICHARDS, *Chief Mining Engr., Hanna Coal Co.*

DISCUSSION:

JOHN R. FOSTER, *C. W. & F. Coal Corp.*

(3) CUTTING AND HANDLING CUTTINGS IN ONE OPERATION

By L. W. HOUSEHOLDER, *Vice Pres., in Chg. of Opr's., Rochester & Pittsburgh Coal Co.*

DISCUSSION:

L. N. THOMAS, *Carbon Fuel Co.*

(4) PREMIUM PAYMENTS FOR MECHANICAL LOADING

By I. N. BAYLESS, *Asst. Genl. Mgr., Union Pacific Coal Co.*

Thursday, May 5

10:00 A. M.

CHAIRMAN: DR. L. E. YOUNG

Vice President, Pittsburgh Coal Co.

(1) ECONOMIES TO BE EFFECTED BY COAL CLEANING

By BYRON M. BIRD, *Chief Concentration Engineer, Battelle Memorial Institute, Columbus, Ohio*

DISCUSSION:

C. W. CONNOR, *Genl. Supt., American Rolling Mill Co.*

K. A. SPENCER, *Vice Pres., Pittsburgh & Midway Coal Mng. Co.*

D. A. THOMAS, *Pres., Montevallo Coal Mining Co.*

JOS. PURSGLOVE, JR., *Pittsburgh Terminal Coal Corp.*

L. A. OSBORN, *Chief Engr., Bradshaw Coal Co.*

W. J. SCHENLER, *Chf. Draftsman, Colorado Fuel & Iron Co., and BENEDICT SHUBART, Denver, Colo.*

■ ■ ■

2:00 P. M.

CHAIRMAN: E. W. JUDY

Vice President and General Manager, Duquesne Light Co.

(1) MEETING THE SAFETY PROBLEMS OF THE ROCKY MOUNTAIN REGION

By WM. MOORHEAD, *Genl. Supt., Utah Fuel Co.*

(2) ACCIDENT PREVENTION WITH PROTECTIVE CAPS, HARD-TOED SHOES AND GOGGLES

By D. W. JONES, *Supt., Valier Coal Co.*

DISCUSSION:

A. J. RUFFINI, *Wheeling Township Coal Mining Co.*

C. W. GIBBS, *Harwick Coal & Coke Co.*

(3) AUTOMATIC BLOCK SIGNALS FOR MINE SERVICE

By L. C. SKEEN, *Fordson Coal Co.*

(4) ORGANIZATION MORALE AND THE HUMAN ELEMENT

By J. S. McKEEVER, *Genl. Supt., Kanawha & Hocking Coal & Coke Co.*

DISCUSSION:

J. D. ROGERS, *Stonega Coke & Coal Co.*

B. C. OSLER, *Pardee Bros. & Co., Inc.*

Friday, May 6

10:00 A. M.

(1) THE REAL COAL PROBLEM

By HON. FLEM D. SAMPSON, *Former Governor of Kentucky*

DISCUSSION:

J. D. A. MORROW, *Pres., Pittsburgh Coal Co.*

J. G. BRADLEY, *Pres., Elk River Coal and Lumber Co.*

H. N. TAYLOR, *Chr., United Electric Coal Cos.*

W. J. JENKINS, *Pres. and Genl. Mgr., Consolidated Coal Co. of St. Louis.*

R. E. TAGGART, *Vice Pres., Stonega Coke and Coal Co.*

GEN. BRICE P. DISQUE, *Ezec. Director, Anthracite Institute.*

Entertainment features of the convention will be found on page 47 of the convention article.



CHAS. C. WHALEY
Chairman, Manufacturers Division
AMERICAN MINING CONGRESS

THE EXPOSITION *of* COAL MINE EQUIPMENT

FOR THE ninth consecutive year, the leading manufacturers of mining machinery and equipment will assemble at Music Hall, Cincinnati, Ohio, under the auspices of the Manufacturers' Division of the American Mining Congress, offering the world's greatest machinery mart.

This exposition is staged for the benefit of the coal producers, who attend the annual convention of Practical Coal Operating Officials, which has become such a vital part in the industry's progress.

Comprising nearly half a million pounds of equipment, ranging from mammoth mine cars and heavy types of coal-cutting and loading machinery, to small types of mining equipment and supplies, the coal exposition will represent all of the latest and modern development in equipment for the safe, efficient, and economical production of coal, displayed by manufacturers who cater to the needs of the coal-mining industry.

The exposition this year will be an extremely interesting one. It offers just



North Wing of Music Hall

what the industry has asked for—ways and means to reduce costs. Every booth will be a live one; filled with information as to how that particular equipment will fit into the industry's determined fight to bring coal far ahead of other industries in economy. Operators will find, on the floor, full information concerning any equipment in which they are interested.

Samples for every conceivable type of equipment for use in coal mine operations will be on display. Some of the exhibits will be actual types of equipment, while others will be miniature working models, and many of them will be in practical operation. An animated map of the United States with sectional

hoists, car control units, different cleaning processes, and model locomotives will also be shown.

Such material as overhead trolley materials, headlights, porcelain insulators, valves, motor starters, circuit breakers, fused junction boxes, welders, and coal drills will be shown. Several different companies will show their complete line of rail bonds, which have been designed for application by either the copper arc weld process or the steel arc weld process. Ties, steel ties, switch ties, mine car stops, switch stands, locomotive wheels, and other equipment will be featured on the floor of Music Hall during the week of May 2 to 7 at Cincinnati.

lights and samples of crude oils from the five major sections of the Nation will be featured. Moving pictures of aerial tramways will be shown. A display will be shown of some zinc-treated mine timbers which are free from decay after 25 years active service. Working models of scraper mucking

One exhibit will offer two working models for the inspection of the delegates attending the convention. A working model of the Wuensch Differential Density Coal Cleaning Process; and a working model of the "Ro-Sieve" will be shown as well as other processes of cleaning coal and another working model: one of electric car stop and car control.

Motor driven models of various car control units will be shown by one company, which will also feature rotary dumps, gravity cradle dumps, chain trip makers, automatic shaft gates, mine car retarders, automatic switches, and other material pertaining to that nature.

Another company will show their stock gears and pinions which have been treated and hardened by a new process which will insure a longer life through ordinary wear and tear.

A new magnetic controller for mining service which will start a motor under abnormal voltage conditions will be shown for the first time at another booth. Another feature will be a new type of overload relay, which in addition to its usual inversetime limit operation, will operate instantaneously in case of a short circuit. The new Gearmotor and the De-ion breaker will also be shown.

Several companies will exhibit wire and wire ropes, and

SOME THINGS TO BE SEEN AT THE EXPOSITION

An animated map spotting five sections of the country from which crude oil is taken.

Mine car wheels tilted on a circular track so that the wheels are emerged in water every five minutes.

Moving pictures of aerial tramways in operation.
A model locomotive.

New Hum-mer screens and vibrators.

A one-piece cast steel depressed center mine car underframe.

New electrical machinery, carbon products and greases.

A new magnetic controller.

A new type of overload relay.

A timber set treated with zinc chloride.

New laboratory and vacuum tube demonstrations.

An operating model of a scraper mucking hoist, imported from England.

Small motor-driven models illustrating phases of car control units.

A new line of electric safety lamps and safety materials.

A new combustible methane gas indicator.

A new rheostat will be shown for the first time.

New headlights, motor starters, welders, and coal drills.

A working model of the Wuensch Differential Density Coal Cleaning Process.

A working model of the "Ro-Sieve."

also a new insulated wire rope and cable.

Coal cutter chains, sprockets, cutter heads, and miscellaneous allied equipment is also to be shown, as well as a set of car wheels mounted on a circular tilted track so

that the wheels revolve and are emerged in a water bath every 30 seconds.

As in other conventions and expositions, coal cutting, conveying, and loading and transportation equipment will feature the heavier type of equipment on display. Hydraulic lifting devices, low vein coal cutting machines, shaker conveyors, and modern washing systems will be shown. Weighing and indicating devices and coal breakers and cleaners, showing the functions of crushing, cleaning, and sizing coal at the mine will be displayed.

The exposition is under the direction of the Manufacturers Division, The American Mining Congress, which is composed of 48 of the leading mining machinery manufacturers. Mr. Charles C. Whaley, of Myers-Whaley Company, Knoxville, Tenn., is national chairman of the Division. Mr. Ralph C. Becker, of Keystone Catalog Division, McGraw-Hill Company, and Mr. John T. Ryan, Mine Safety Appliance Company, are vice chairmen. Much credit for the success of the exposition is to be given to the untiring efforts of Mr. Whaley and his board, who have worked diligently in its behalf. Particularly are they to be congratulated in achieving such success in and under such conditions as confront both the coal operator



South Wing of Music Hall



John T. Ryan
Vice Chairman,
Manufacturers' Division

pany. He is recognized throughout the industry as one of the ablest of exposition managers and his cooperation this year assures a smooth running and excellently managed exposition.

The convention has been popularly termed the "Academy of Modern Mining Practice." But it is something more. Together with the exposition it is the greatest mining equipment mart in the world. Operators congregate from the four corners of the country to hear and see; manufacturers congregate from every center to contact this great market. It is a service of like importance to each group. A coal operator may see a vast amount of machinery in which he is interested with small expenditure of money and time; a manufacturer may contact his present and his potential market with equal economy.

The following list of the exhibitors, certainly insure an interesting, instructive, and highly representative exposition:

American Cable Co., Bridgeport, Conn.

American Steel & Wire Co., Chicago, Ill.

American Wood Preservers Assn., Chicago, Ill.

Bethlehem Steel Co., Inc., Bethlehem, Pa.

Brown-Fayro Co., Johnstown, Pa.

Carnegie Steel Co., Pittsburgh, Pa.

Chicago Pneumatic Tool Co., New York, N. Y.

Cincinnati Frog & Switch Co., Cincinnati, Ohio.

Cincinnati Mine Machinery Co., Cincinnati, Ohio.

Clarkson Mfg. Co., Nashville, Ill.

and the manufacturer.

Mr. L. W. Shugg, General Electric Company, will again serve as director of exhibits. The exposition is to be congratulated upon having Mr. Shugg's services, which are made available through the courtesy of his company.

Condon Bearing & Supply Co., Pittsburgh, Pa.

Deister Concentrator Co., Ft. Wayne, Ind.

Duncan Foundry & Machine Co., Alton, Ill.

E. I. duPont de Nemours & Co., Wilmington, Del.

Edison Storage Battery Co., West Orange, N. J.

Electric Railway Improvement Co., Cleveland, Ohio.

Electric Storage Battery Co., Philadelphia, Pa.

Fairmont Mining Machinery Co., Fairmont, W. Va.

General Electric Co., Schenectady, N. Y.

General Steel Castings Corp., Eddy-stone, Pa.

Goodman Manufacturing Co., Chicago, Ill.

Hazard Wire Rope Co., Wilkes-Barre, Pa.

Hendrick Manufacturing Co., Pittsburgh, Pa.

Hercules Powder Co., Wilmington, Del.

Jeffrey Manufacturing Co., Columbus, Ohio.
Joy Brothers, Inc., Marion, Ohio.

Joy Manufacturing Co., Franklin, Pa.
Koppers Rheolaveur Corp., Pittsburgh, Pa.

A. Leschen & Sons Rope Co., St. Louis, Mo.

Link-Belt Company, Chicago, Ill.

Lorain Steel Co., Johnstown, Pa.

McGraw-Hill Publishing Co., New York, N. Y.

McNally-Pittsburgh Manufacturing Co., Chicago, Ill.

Macwhyte Company, Kenosha, Wis.

Mining Congress Journal, Washington, D. C.

Mine Safety Appliances Co., Pittsburgh, Pa.

Mining Safety Device Co., Bowerston, Ohio.

Myers-Whaley Company, Knoxville, Tenn.

National Carbon Co., Cleveland, Ohio.

National Malleable & Steel Castings Co., Cleveland, Ohio.

National Safety Council, Chicago, Ill.

Niagara Concrete Mixer Co., Buffalo, N. Y.

Ohio Brass Co., Mansfield, Ohio.

Post Glover Electric Co., Cincinnati, Ohio.

Pure Oil Company, Chicago, Ill.

Roberts & Schaefer Co., Chicago, Ill.

Robinson Ventilating Co., Zelienople, Pa.

John A. Roebling's Sons Co., Trenton, N. J.

Safety Mining Co., Chicago, Ill.

Sanford-Day Iron Works, Inc., Knoxville, Tenn.

Simplex Wire & Cable Co., Cambridge, Mass.

Streeter Amet Co., Chicago, Ill.

Sullivan Machinery Co., Chicago, Ill.

Teletypewriter, Cincinnati, O.

Timken Roller Bearing Co., Canton, O.

Tool Steel Gear & Pinion Co., Cincinnati, Ohio. (Continued on page 72)



L. W. SHUGG
Director of Exhibits

(Courtesy of the General Electric Company)

Hulburt Oil & Grease Co., Philadelphia, Pa.

Hydrotator Company, Hazleton, Pa.

WASTE

PREVENTION

By E. B. Agee*

THE PREVENTION OF WASTE at operating coal mines is now demanding the closest attention of practical coal operating men throughout the coal industry in every coal field as never before. The coal industry has developed by leaps and bounds in the past 50 years, keeping pace with the industrial progress of our great country. This industrial revolution of a nation was made possible by the use of coal. A king was enthroned by industry and so acknowledged by the public. Coal will continue to be king just as long as the men within the mining industry have the will and determination to make it king. However, in order to keep "King Coal" on his industrial throne, quality coal must be produced at the lowest possible cost and then sold to the consumer at a fair profit.

It is, therefore, reasonable to admit that in the producing of coal practical operating men must prevent waste of all kinds in and about the mines whenever and wherever possible. The present "era of not-so-good business" is attacking the resources of the ablest men in the mining industry. Good management is now demanding that waste prevention practices at the mines be made more effective than ever before, in order that the production cost per ton may

be kept at the lowest possible figure.

The prevention of waste in and about the mines should be classified into three distinctly separate groups, as follows:

FIRST—SAFETY—
PREVENTION OF
ACCIDENTS

SECOND—TIME—
WASTE OF

THIRD—MATERIALS AND EQUIPMENT—WASTE OF

Safety

Great savings may be realized through the elimination of accidents. Accidents cause a loss impossible for anyone to determine in dollars and cents. The prevention of accidents offers an unlimited field of activity for progressive operating men, regardless of their positions.

Many mining companies have no safety program in effect. Some have gone into the safety movement half-heartedly, with little or no resultant savings realized. Some do certain things necessary to comply with the laws of the state and to satisfy the state mine inspectors. Others may satisfy the prick of conscience by talking safety but doing little about it. However, a majority of mining officials and operating men have gone into the safety movement whole-heartedly, putting all they have into the work. These progressive mining companies, together with their operating officials and bosses, realize that dollars and cents will be saved by the prevention of accidents to employees and equipment.

The prevention of accidents in the mining industry should be regarded as one of the major responsibilities of



Coal must be produced at the lowest possible cost

executives, officials, bosses, and employees from top to bottom of any mining organization.

The Youngstown Mines Corporation, at its Dehue mines, located at Dehue, Logan County, W. Va., has made an enviable record in accident prevention work, having completed 14 months on March 7, 1932, without experiencing a lost-time accident in or about the mines. The mine is gaseous, employing 400 men, and produces 2,500 tons of coal daily.

We have learned that safety and efficiency go hand in hand. You cannot have one without having the other at operating coal mines. Safe workmen lower the cost of production.

Our safety program is built up on a firm conviction that management is responsible in one way or another for at least 90 percent of all accidents. Management is also responsible for the prevention of accidents and the resultant losses that necessarily follow each and every accident.

Our higher executives do not hesitate to provide money for the prevention of accidents. The mine is rock-dusted thoroughly and a minimum standard rock dust requirement maintained by

* Superintendent, The Youngstown Mines Corporation, Dehue, W. Va.

frequent inspection. Flame-proof mining machines, locomotives and other equipment have been installed and rigid, systematic inspections made of such equipment. Fire-fighting equipment is maintained at convenient locations throughout the mine and fire extinguishers kept on each motor and mining machine. The latest improved electric cap lamps are provided each inside employee. Standard methods of setting timbers and laying track are established.

A safety inspector, in charge of safety activities, is employed whose duties are to inspect the mine and report conditions as found, to the plant superintendent, for action. He is chairman of the Employees' Safety Club, and conducts regular semi-monthly meetings of the members. First-aid training is done under his supervision, as is mine-rescue training. We maintain a trained rescue team for the West Virginia Department of Mines.

Physical examination of all men by our company physician is required. Weekly mining classes are conducted by the Mining Extension Department of West Virginia University. Safety rules and standards have been established for each job and a book of such rules and standards given to each employee. A minimum set of tools is required of each miner at all times. He is not allowed to work until our standard tool requirements are met. Each foreman is held responsible for accidents to men working under him and also for the maintenance of discipline. Close and strict supervision of their men is expected and required of every boss.

Regular weekly meetings are held by the superintendent with the foremen, where ways and means are discussed for preventing accidents. The cause of each accident is also ascertained and, after thorough investigation, the responsibility placed and action taken to prevent repetition.

Safety suggestions from employees are rewarded when adopted.

Attractive bulletin boards are placed at suitable locations in and about the mine.

Friendly safety accident prevention contests between various sections of the mine are found to produce results. Mothers, wives, and children are also kept interested in various ways in our accident prevention work through the school, church, Boy Scouts, Girl Scouts, and other civic organizations in the community. The cooperation of our employees, from top to bottom, together with the members of their families, with the management, has made possible the establishing of our enviable record of 14 months' operation without a lost-time accident.

The prevention of accidents is waste prevention of the highest order and not

only saves human suffering and misery to employees, but also saves unlimited dollars and cents to both employers and employees.

Waste of Time

Time is probably the one thing above all that we can least afford to waste. The failure of employees to give the full measure of time for which he is paid, through tardiness, lack of application to duties, diversion of time during working hours to personal affairs, creates loss and wastage of great proportions.

We endeavor to reduce these wastes of time by closely observing the habits and practices of the employees when on duty and correcting them when found. Strict discipline is maintained at all times. Each and every employee must record by time clock the time he goes to work and the time he quits work. The individual time clock record cards are checked at regular stated periods, insuring both the company and the employees that no mistakes are made in the keeping of time. We avoid disputes, misunderstandings, and hard-feelings with our employees as errors are easily found and corrected.

We do not allow loitering and visiting among employees. Peddlers and solicitors are prohibited from visiting the men while at work. Regular lunch hour periods are provided for day and monthly men.

Efficient and economical schedules are arranged for trip motors, under the direction of a dispatcher; cause of delays, if any, ascertained, and effective measures taken to prevent recurrence. The efficiency of gathering motors are examined daily and steps taken to increase efficiency where found below our mine standards.

Motor crews are checked in and out of our inside motor barn daily, reports made, and motor repairs completed promptly, if needed. Time wastes of motormen and brakemen and equipment are reduced to a minimum as our fully equipped inside motor barn permits positive control over transportation, employees and equipment. Cooperation between employees of the Repair and Maintenance Department and the Operating Department is demanded at all times. As a result of such cooperation, time wastes to the transportation system are minor ones at Dehue.

Our inside telephone system is complete throughout the mine and time delays of any kind are remedied rapidly and efficiently. Inside telephone cables are laid underground to prevent delays due to slate falls and to insure uninterrupted communication with the outside at all times. Cables are placed in fiber conduit to prevent electrolysis.

And last, but not least, is the careless employee. The careless employee is eliminated as quickly as possible. He not

only wastes his own time, if possible, but also the time of his fellow employees. He will also waste material and supplies and abuse equipment.

Waste of Materials and Equipment

Failure to appreciate the dollars and cents value of the material, equipment, and facilities we use or come in contact with in our daily work causes immense wastage.

The value of a mine tie, one post, or one spike is relatively small but, in the aggregate, their value reaches millions. The waste of one means little, but the value of a few wasted here and a few there, runs into much money in the course of time. The ordering, storage, distribution, and use of supplies and material offers an unlimited field for the development of waste saving practices. The proper salvaging of worn-out or obsolete machinery and equipment offers opportunities that should not be overlooked.

A few waste-saving practices in effect at Dehue are as follows:

Materials and supplies are ordered on a 30-days' supply basis. Supplies and materials are properly housed and stored when received and distributed through regular channels by supply men upon written order from the foreman in charge of the work. Supplies and materials are used when received and when a job is completed, any surpluses are returned to the warehouse at once. Excess or insufficient lubrication of machines, cars, locomotives, etc., are checked. An oil house with underground tanks and pumps allows us to control this situation almost perfectly. A central point in the mine and on the outside is provided for the accumulation of scrap brass, copper, or other metals. Meters are installed at each dwelling to prevent power wastage. A frequent check of electric lights used in the mine and on the surface is made. The recovery of coal in stumps is given particular attention and falls are not allowed to stand over. The recovery of timber in ribs is given careful attention and ways and means taken to recover a maximum percentage. Accumulation of unused supplies or materials in repair shops, inside or outside, are not tolerated. Equipment, tipples, mine buildings, houses, etc., are kept in repair to prevent waste of time and materials.

In conclusion, we believe that every mining plant, large or small, offers unlimited opportunities to effect savings, regardless of its location or conditions.

This "Era of Not-So-Good Business" is forcing good mine managers to become better ones. The Prevention of Accidents and the waste reduction of time and material in and about the mines is nothing more or less than good management.

The LEGISLATIVE SITUATION



SPRING FINDS CONGRESS, which has been in continuous session since December last, still in the throes of legislation, with taxes and the tariff occupying the spotlight. Most of the emergency legislation to meet the depressed economic situation has been enacted and attention has lately been centered on balancing the budget through enactment of increased taxes and economy measures, and modification of the tariff law. Plans are being laid for adjournment of the session in June until the following December.

The House passed a new tax bill estimated to raise more than a billion dollars and it will be given prompt consideration by the Senate. The chief feature of House consideration of the measure was defeat of the sales tax and the substitution of other taxes, including changes in the mine depletion section under which it is estimated \$24,000,000 additional taxes will be imposed. This will be brought about by taxing distributions from depletion reserves based on discovery value and those paid out of surplus acquired prior to 1913 and allowance of depletion on revised estimates of recoverable units. The House granted to the sulphur industry a 27½ percent depletion rate. Taxes on transportation of oil by pipelines, imported oil, gasoline and coal, maximum surtaxes of 40 percent, a tax on lubricating oil, increase of the corporation tax to 13½ percent with 1½ percent additional on consolidated tax returns, continuance of the present foreign tax payment credit, defeat of publicity of tax returns, application of the surtax to incomes of \$6,000 and over and defeat of proposed taxes on imported manganese and fluorspar were some of the outstanding points in the action of the House on the tax bill. At one stage of the proceedings, the House Ways and

Means Committee approved an amendment suggested by Representative Douglas (Dem., Ariz.), for a tax of 4 cents per pound on imported copper, but later by a vote of 14 to 8 decided to drop the proposal as it would involve changes in many of the tariff rates. Representative McFadden (Rep., Pa.), said the new taxes were not necessary as the Government will collect \$917,634,000 in pending tax cases before the Internal Revenue Bureau and Board of Tax Appeals. Congress received from the War Policies Commission a recommendation that during war a 95 percent tax on all incomes of corporations and individuals in excess of their prior three-year average be imposed. Senator McKellar (Dem., Tenn.), a foe of tax refunds, presented a bill to suspend their payment on tax returns from April 6, 1917, to July 2, 1921. Bills were also introduced to reduce international double taxation, to collect an income tax on capital invested by Americans in foreign countries and authorizing corporations to deduct for contributions for unemployment relief.

Copper Tariff

PLEAS FOR A TARIFF on copper were made to the Senate by Senators Vandenberg (Rep., Mich.), and Hayden (Dem., Ariz.), the latter stating that the Senate Finance Committee would be asked to provide such a tariff in the pending tax bill. While reports are current that the policy committee representing the House and Senate leaders has decided against tariff rate revision at this session, it is understood the House Ways and Means Committee will consider a copper tariff at hearings in the near future. The Senate passed a bill previously approved by the House for

changes in tariff rates by Congress instead of the President on reports of the Tariff Commission and for an international conference for the purpose of reducing world tariffs in the interest of reviving trade, and another bill authorizing an investigation by the Tariff Commission and a special Senate Committee as to the effect of depreciated foreign currencies on imports into the United States. A resolution was introduced by Senator Jones (Rep., Wash.), for an investigation by the commission of foreign competition on the naval stores and lumber industries. Bills were presented by Senator Thomas and Representative McKeown (Dems., Okla.), authorizing the commission to fix duties on imported oil to protect the American industry based on reports on production and imports on April 1 and October 1 yearly.

Silver Inquiry

FURTHER TESTIMONY was received by the House Coinage Committee in its investigation of the depressed price of silver, largely from representatives of corporations engaged in international trade who testified as to its dislocation due to depreciated currencies, and from economists who were not inclined to concede to silver any greater consideration than that of a commodity subject to price fluctuation. On the other hand a silver advocate appeared in the person of B. M. Baruch, war-time Government advisor, who said that cooperative action among the principal governments affected, tending to the purchase and segregation of silver as a commodity, would increase the market price of silver and the buying power of the Orient. Stabilized exchange was favored by T. C. Reiber, vice president, the Texas Company. Members of the committee indi-

cated that silver occupies a large place in the economic situation and that improvement of its price would aid in rectifying the economic and exchange situation. Bills were introduced in the House and Senate giving Congress power in time of war to regulate prices, rent or compensation for the use of any real or personal property.

Coal Control

IN CONTRAST to former years when coal operators were a unit in opposition to legislation for regulation of the coal industry, hearings before the Senate Mines and Mining Committee on the Davis-Kelly and Lewis bills for such regulation through a commission revealed considerable support for the legislation among operators who said the bituminous industry had been unable to voluntarily stabilize conditions, which they describe as growing worse, and that Government cooperation is essential to the prosperity of the industry. To meet the objection of creating additional government expense it was suggested that the administration of the legislation be financed through a tax on the industry on a license or tonnage basis. New coal bills making their appearance in Congress were measures by Representative Bachman (Rep., W. Va.), authorizing two or more States to enter into agreements for cooperative effort in regulating production of bituminous and establishment of agencies to carry them into effect, and by Representative Lewis (Dem., Md.), regulating both bituminous and anthracite through a commission and councils of coal operators.

Mine Bills

ADDITIONAL BILLS were introduced by Representative Swing (Rep., Calif.), and Senator Wheeler (Dem., Mont.), to suspend the annual assessment work on mining claims during the years ending July 1, 1932 and 1933. A two-year extension of potash prospecting permits was proposed in bills by Representative Colton (Rep., Utah), and Senator Cutting (Rep., N. Mex.). While the House voted to abolish the assay offices at Boise, Carson City, Helena and Salt Lake City on July 1 next, Senator Norbeck (Rep., S. Dak.), introduced a bill to establish an assay office at Deadwood, S. Dak. Extension of the mining laws to the Panama Canal Zone was suggested in a bill by Representative Strong (Rep., Kans.). Proposed legislation suggested by the President's Commission on Conservation of the Public Domain to cede the surface rights of the domain to the

States was considered at hearings by Senate and House committees having jurisdiction, during which representatives of the States asked also for the sub-surface rights. Senator Walsh (Dem., Mont.), introduced a bill to grant all the land to the States on condition that they charge a royalty of not less than 12½ percent on oil and gas produced thereon and to pay 52½ percent of the receipts to the Government for reclamation purposes. The Government would also have the right to pro-rate oil and gas production

to school land grants when Government reservations to the land are revoked. Bills were reported by Senate and House committees to meet the expenses of an International Geological Congress which will meet in Washington, D. C., next year to consider the silver, copper and petroleum situations.

Production Control

THE AMERICAN MINING CONGRESS, through its Secretary, J. F. Callbreath, endorsed before the Senate Judiciary Committee a bill to permit the natural resources industries to make agreements to adjust production to consumption under approval of the Federal Trade Commission. The legislation was proposed by Senator Steiwer (Rep., Oreg.), and endorsed by Secretary of Interior Wilbur. Senator Thomas and Representative McKeown (Dems., Okla.), presented bills to conserve oil and gas by correlation of domestic and foreign production under interstate compacts between two or more States. Representative LaGuardia (Rep., N. Y.), reintroduced his measure of a previous Congress to prohibit the sending and receipt of stolen property through interstate commerce, which it is said would meet the wishes of mineral producers who have advocated a Federal high grading act. Congress passed and the President approved a bill directing the Interstate Commerce Commission to investigate and report by December 15 on a proposed 6-hour day for railroad employees.

Congress passed and the President approved a law restricting the right of courts to issue injunctions in labor disputes and forbidding enforcement of contracts requiring employes not to join a labor union. In the debate criticism was leveled at injunctions previously issued in coal strikes which it was claimed discriminated against labor and infringed on constitutional rights of citizens. Senator Wagner and Representative Celler (Dems., N. Y.), introduced bills appropriating a billion dollars for emergency construction, including an experiment station of the Bureau of Mines at College Park, Md. A House committee reported a bill requiring the purchase of mine and other products of domestic origin for public use by the Government. The Senate passed a bill for regulation by the Public Utilities Commission of securities sold in the District of Columbia.

The Senate Agricultural Committee reported the bill of Senator Norris (Rep., Nebr.), for operation of the Muscle Shoals, Ala., nitrate and power project, and the House Military Committee also reported a bill on the subject.

Latest News of Congress

TAX BILL Passes House, With Mine Depletion Changes.

COPPER TARIFF to be Urged on Senate.

EVIDENCE FOR SILVER Continues Before Coinage Committee.

COAL REGULATION Favored by Bituminous Operators.

NUMEROUS MINING BILLS Being Considered.

PRODUCTION CONTROL for Mineral Industries Advocated.

ANTI-INJUNCTION BILL Becomes Law.

MUSCLE SHOALS LEASE BILL Reported by Committees.

GOVERNMENT ECONOMY and Reorganization Proposals.

IMMIGRATION RESTRICTION BILL Reported.

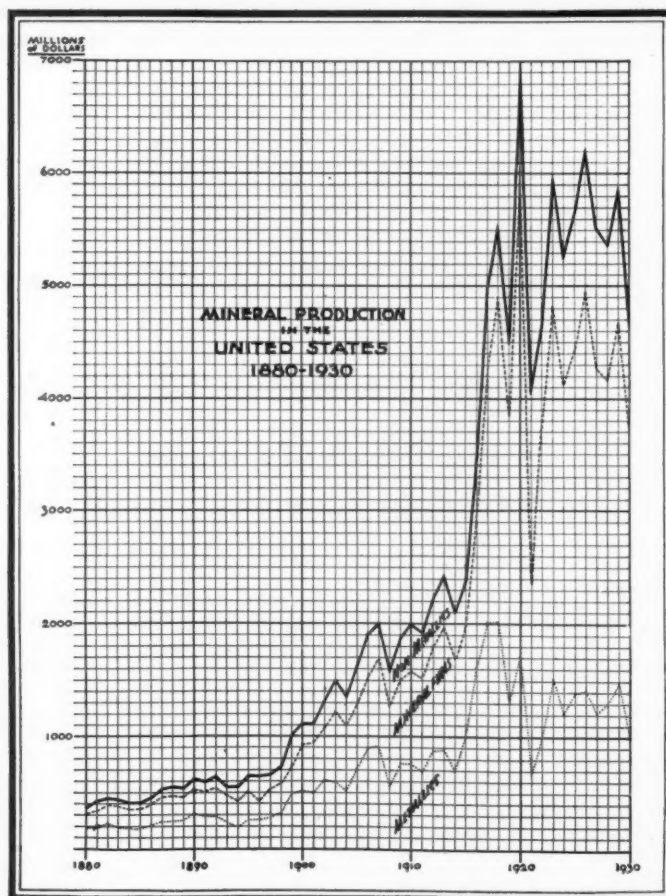
on the lands and to reserve the helium resources. Mineral leases, including those for oil and gas, would run for 20 years. The lands would be open to metal mining prospecting for 25 years and if commercial minerals are found the discoverer would be entitled to a perpetual lease subject to a royalty of 5 percent of the value of extracted ores. The House passed and a Senate committee reported a bill to vacate the withdrawal of public lands for reclamation purposes and extension of mining prospecting and leasing thereon. A bill was reported by a Senate committee authorizing 20 year mineral leases on lands granted to Wyoming for educational purposes. The Senate passed a bill giving title to the States

Silver

SILVER HAS fluctuated during the past month between 31 cents and 28 cents per oz. There is a growing belief that silver will work its way back into increased monetary use which, with continued curtailment of output, must inevitably result in improved conditions for this metal, even though stabilization be deferred. Sir Reginald McKenna, of the Midland Bank, Ltd., London, said: "Prompt international cooperation on silver stabilization is not only desirable, but imperative." Representative Somers, of the Coinage, Weights and Measures Committee, stated his confidence that a stabilization conference would be held within a year.

The announcement that Mexico will buy 23,000,000 oz. this year and that Cuba will utilize 10,000,000 oz. for coinage purposes, joined with agitation in Canada, Australia, France and Germany for increased subsidiary silver coinage, as well as South African coinage, has been followed by a bill in the United States Senate advocating the purchase by the Government of whatever silver is currently produced in this country at the prevailing market price, making payment with silver certificates and retaining the metal in the treasury for coinage and for security against the paper money.

Trading in silver, early in April, became active in amounts reaching 4,375,000 oz. on April 9, a new high for the year, at 28½ cents per oz.



MARKET TRENDS

Potash

FOLLOWING DEVELOPMENTS quoted last month in Texas-New Mexico potash, announcement is made of extensive additions at Trona, Calif., where the American Potash and Chemical Corporation will add equipment increasing their capacity 125 tons of potash per day.

Fluorspar

A PROPOSED 50 percent increase in water-rail freight rates on fluorspar into the Youngstown district has been protested before the Interstate Commerce Commission.

Antimony

THE MONTH opened with antimony quiet at 6.12½ cents duty paid, New York. Few inquiries were received during the month and bonded stocks increased by 210 tons to a total of 917 tons in New York, the largest since October, 1930.

Quotations were made for April-May shipment at 3.62¢-3.75¢ c. i. f. New York; and 6¢-6.10¢ f. o. b. New York for domestic trade.

Cinnabar

QUICKSILVER OPERATIONS expanded, due to the prevailing high price, approximately \$1 per lb. More than \$3,000,000 have been expended in research leading to the successful mercury boiler. Two power plants are now under construction, each requiring 125 tons of mercury for their boilers. New deposits have been opened in the Terlingua district of Texas, and in Arkansas.

In 1931, California produced 54 percent of the American production; Oregon, 16 percent; production fell off in Nevada, increased in Texas, and was augmented by the new Arkansas field.

Aluminum

THE ALUMINUM COMPANY OF AMERICA states that no new uses for aluminum are announced by their research department until they have been thoroughly tested. Among the recent increased adaptations of aluminum are ink, coating for papers, various dairy utensils, and railroad freight cars.

Nickel

THE INTERNATIONAL NICKEL COMPANY reduced its operating budget in 1931 by 51 percent, but increased it for research, sales and development 25 percent.

Phosphate Rock

LARGE PHOSPHATE ROCK deposits in Montana are being developed for shipment of raw pulverized rock to China and Japan, where this material is preferred in its native state to the acidulated product.

Coal

EARLY IN April the N. Y. N. H. & H. Railroad closed its fuel contract for 250,000 tons at 61¢-64¢ per ton, the lowest contract of its kind ever made by that road.

The demand for domestic sizes in New England fluctuated with the weather. In the Pittsburgh area, where ordinarily April 1 brings great activity in fuel contracts, there was little interest exhibited and, although practically no coal has been mined in Ohio, Indiana or Illinois since April 1, no difficulty was experienced in securing the larger sizes. Pittsburgh slack advanced 10 cents a ton and the Kentucky and West Virginia fields afforded a plentiful supply. Retailers in the Chicago and lake markets ignored the labor situation, and strip and co-operative mines in Ohio and Indiana added to the surplus. The domestic season is about over, and it is anticipated that the lake movement will be slight this year, due to a heavy carryover.

Wholesale and retail anthracite coal prices were cut on April 1 to the lowest point in 14 years; which was immediately followed in the New England area by a cut in domestic coke prices. Several thousand anthracite miners who had been on strike, returned to work.

Cobalt

ORE OF COBALT is now brought out by air, in 100-lb. sacks from the mines at Werner Lake, Ontario, to the railroad at Minaki.

Molybdenum

NINETY-SEVEN PERCENT of the world's supply is produced by three companies, of which the Climax Molybdenum Company, of Colorado, furnishes 75 percent, with ore reserves of 190 years; and the Molybdenum Corporation of America, operating in New Mexico, and a Norwegian company furnish the balance.

Zinc

THE ZINC industry continues in the doldrums, with little inquiry; ore pro-

ducers in the Tri-State district withholding their production, and smelters discouraging sales at present prices. Production so far this year has approximated three-quarters of that for the same period last year. Prices have ranged from 2.75¢-2.77½¢ per lb., with 2.80 cents quoted for May.

Chrome

AFRICAN CHROME MINES, LTD., have purchased the Transvaal chrome deposits, and are said to control 85 percent of the world's output, which approximates 70,000 tons per year.

Tin

THIS METAL has been very jumpy due to fluctuations in sterling. Opening the month at 21.90 cents, it later declined 1 cent a lb. and over 500 tons were purchased for the American market by consumers who had been waiting for a lower price. Liquidation in France caused a decline in the foreign market, which culminated in declining prices of 19.62 cents, 19.50 cents, 19.25 cents to 18.50 cents, a new low level—the lowest since 1898.

The world's visible supply of tin declined 520 tons in March. It was rumored that the International Tin Committee is endeavoring to effect further curtailment of output on May 1. This committee has created a new research section for the development of new uses and the strengthening of existing markets. The United States is the world's largest consumer of tin.

Copper

MAGMA COPPER reported cost after deducting silver and gold credits and including state and county taxes of 8.39 cents a lb. Utah Copper, the lowest cost producer in the United States, quoted 6.59 cents per lb. as their 1931 costs before depreciation, their output having been 142,694,917 lbs. of refined copper in 1931.

The Phelps-Dodge Corporation suspended operations at Ajo on April 24 and will suspend at Morenci July 1, producing only at Bisbee. Incidentally by virtue of their fabricating outlets, and despite the unfavorable conditions of the industry, this company closed the year with practically no stocks of copper on hand and with an operating profit for 1931 of approximately \$1,000,000 before depreciation. After July 1 they will lead the large operations by reducing their production to a maximum of 12 percent of their rated capacity. Roan Antelope cut their output to 20 percent of capacity for the balance of the year.

There has been agitation throughout the month for a tariff on copper.

President L. S. Cates, of the Phelps-Dodge Corporation, said that unless an import duty is placed on copper, domestic producers will never be able to operate at more than 27 percent capacity. Opinions, however, have been extremely divergent, the productive capacity of those favoring a tariff being 457,500 tons per year and of those opposed to a tariff, 861,400 tons per year. It is agreed that such a tariff would constitute an embargo and not a revenue producer. Foreign producers claim that American mining companies write off much higher depletion charges than do foreign companies. Also since American producers have a substantially larger exportable surplus than the rest of the world, curtailment of production cannot be as severe in its reaction on them. The governments of 12 copper producing states waited upon President Hoover, urging an import tax of 6 cents per lb.

Nearly all metal contracts provide that any sales tax imposed is to be paid by the buyer.

Many American consumers feel that it will be time enough to give renewed attention to copper when statistics show that refinery stocks have been substantially reduced. Notwithstanding protestations to the contrary, reports that some sellers were shading the 5.75¢-6¢ rate on copper has caused the market to drag.

Lead

THE LEAD market has been stable in price and somewhat more active in movement. Many small consumers made inquiries for April shipments. Paint and battery manufacturers, anticipating seasonal expansion, made inquiry for quotations on large tonnage orders for April shipment and the market remained steady at 2.90 cents to 3 cents a lb.

Transportation

THE INTERSTATE COMMERCE COMMISSION refused barge-rail route extensions over Federal barge lines from Oklahoma-Texas to New Orleans; west Kentucky-Tennessee to Mobile and New Orleans via Memphis; and southern territory to Mobile and New Orleans, in violation of long and short haul.

The railroad surcharge of 6 cents per ton, allowed by the Commission under the railroad revenue pooling plan, increased the total revenue from coal \$138,000 for the week ending March 12 over the preceding week.

The COAL DIVISION of The AMERICAN MINING CONGRESS



By
G. B. Southward

THE COAL DIVISION of the American Mining Congress, which has recently been formed, assembles all of our coal activities into a unified group. These activities include the Annual Convention and Exposition, the Mechanization Survey and Coal Mining Standards.

The division is divided into two sections—the Operators' Section and the Manufacturers' Section. Membership of the Operators' Section is composed of coal companies; the Manufacturers' Section is composed of mining equipment companies and each member company is represented in the division by one of its operating staff. The work of each section is directed by its Board of Governors and contact between the two sections is effected through the Executive Committee of the division. The organization plan and personnel of the two boards is shown on the opposite page.

The purpose of the division is to provide a continuous and close contact between companies and individuals, to gather and distribute to its members information and data on every phase of coal mining, so that all our thoughts and efforts which are directed toward the improvement of coal mining may be crystallized and coordinated. There is much to be done and a number of men working together can accomplish a great deal more than they could by working individually and separately.

This organization is based on the belief that the production of coal will continue to be one of the major industries of our country and that its mining can be made profitable. This belief is held with a full understanding of the seriousness of present conditions and with a full realization of the numerous difficul-

ties which have to be met and overcome before better things will result. But the real hope for the future lies in the fact that the brain power of the coal industry is competent to solve the problems and overcome the difficulties.

Just now a great deal of pessimism is prevailing. It could hardly be otherwise in view of the tonnage loss which coal has suffered during the past two years. But the greater part of these recent losses is due directly to the general industrial depression and anyone exceeds the bounds of allowable pessimism if he fears that coal mining is on the decline and is in a similar position to buggy manufacturing of a generation ago. It is true that oil and natural gas have made serious inroads into the fuel market during the past 10 years, but coal is still the major source of heat and power in the United States. There is some encouragement in this and the figures shown in the following paragraph are submitted to substantiate it.

Tables compiled by the United States Bureau of Mines show how the source of fuel energy used in the United States is divided between coal, oil and natural gas. A comparison between the total amount of fuel used in 1921 and 1930 (both years of low industrial activity) will give a good general idea of the trend during the past 10-year period. From the tables the percentage of the total heat and power energy—calculated on a B. t. u. basis—furnished by each kind of fuel was:

	1921	1930
Coal	75.7%	64.0%
Oil	20.3%	26.4%
Natural gas ..	4.0%	9.6%
	100.0%	100.0%

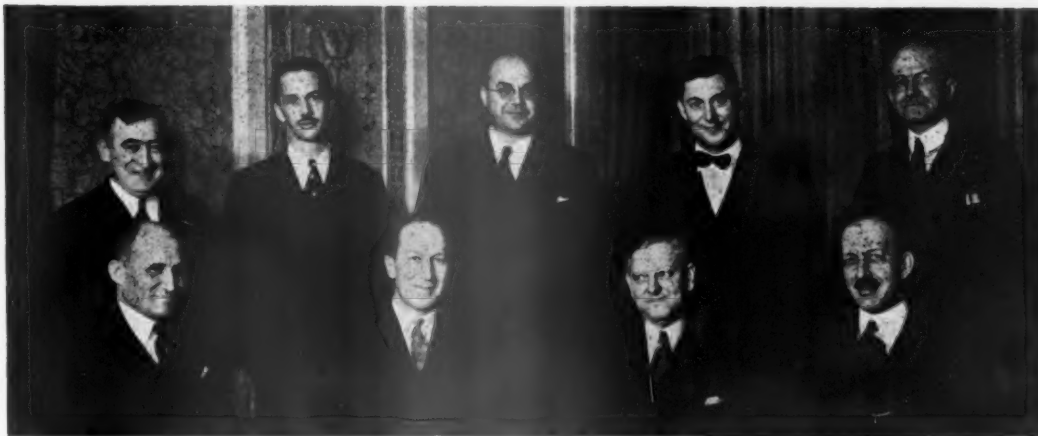
The total amount of coal consumed for heat and power in the United States was:

1921	473,799,000 tons
1930	517,138,000 tons

The figures in the first table show that in 10 years the proportion of the total fuel energy furnished by coal decreased from 75.7 percent to 64.0 percent. Taken by itself this might well be considered disturbing, but a better basis for judging the true condition is given by the second table, which shows that the amount of coal consumed was 43 million tons greater in 1930 than in 1921. Taken together, these figures indicate that there has been a great increase in the amount of power used in the United States and, while coal did not furnish as great a proportion of the total fuel energy in 1930 as in 1921, there was nevertheless 9 percent more coal consumed in that year than in 1921.

The foregoing figures may appear to be digressing from the subject of this article. However, they are introduced here for the express purpose of emphasizing the fact that a market for coal still exists and as far as we can determine it will continue to exist for some years to come. Certainly for long enough to justify our best efforts toward improving equipment and operating methods to whatever degree is possible for reducing mining costs and creating profits.

So the real question which confronts the operating men of the coal industry today is not whether it is worth while to attempt improvements but rather what improvements are needed and what is the best way to accomplish them. The answer to this is not so easy—in fact, it is so difficult and there are so many different angles to be considered that we may be very sure that the solution will not be worked out by any one man or by any one company. Therefore, what we need is an effective means of combining our collective knowledge and experience (Continued on page 72)



Standing (left to right) P. C. Thomas, G. B. Southward, Paul Weir, R. L. Ireland, J. F. Callbreath

Seated (left to right) E. J. Newbaker, R. E. Taggart, Frank R. Lyon, Dr. L. E. Young

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Note: Two additional representatives from Illinois and representatives from anthracite to be announced later.

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One representative from each of 200 coal companies.

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One representative from each of 48 manufacturing companies.

PRACTICAL OPERATING MEN'S DEPARTMENT COAL

Practical Operating Problems of the
Coal Mining Industry

NEWELL G. ALFORD, Editor

VENTILATION CODE

as Exemplified by Modern Practice

by A. W. Hesse*



A YEAR HAS ELAPSED since The American Mining Congress Coal Mine Ventilation Committee approved the "recommended practices to be employed in the ventilation of coal mines in the United States." In that period of one year, operators may be said to have gone "air minded," not in the sense of aviation, but to obtain all that good ventilation of coal mines stands for; namely, safety and economy. There has hardly been a program in the past year, for mining men, that did not have some time devoted to ventilation or phases of mining related thereto. Naturally, to those who have given their time and study for the purpose of improving the standards, as well as those who are interested in reaching a common standard for operating purposes, there is a desire to learn what reaction, if any, these recommendations have brought out and whether or not the code conforms to what has or is being done by the mining fraternity on the subject of ventilation.

* Chief Coal Mining Engineer, The Youngstown Sheet and Tube Co., Nemaquin, Pa.

At no time, during the formulation, nor since, have there been explanations or reasons advanced for the various sections, and wording of same, in the code; therefore, one object of this article is to try to recall the various influences which were brought to bear on the committee and give those, who desire to express themselves, an opportunity to add to our knowledge of what we considered at the time, modern ventilation practice for coal mines.

A recent canvass of the 32 members of the committee has added some suggestions that are worth while pondering over, and will be mentioned under the phases concerned.

When one realizes that it is now four years since this committee first started its work and, may I say that the subject has never been entirely dismissed from our minds during that time, there is no doubt but that all have benefited to some extent from this work. The first act of the chairman was to distribute copies of a questionnaire to committee members,

the answers to which served as the basis for the tentative code. At the first meeting September 28, 1928, to discuss this set-up, two important decisions were made that should be here mentioned; namely:

1. The American Mining Congress, through its secretary of the Standardization Division, Mr. J. M. Hadley, stated that "the organization wants to have these codes evolved by the industry for the use of the industry alone. We don't as an organization try to obtain anything in state legislation."

2. That the code should include good operating practices as well as safety features. The preamble clearly states this.

For a number of years the definition of return air has been sidestepped; state inspectors as well as most mining men have refused to express themselves publicly. The United States Bureau of Mines expressed its views in Decision No. 8 in which the terms "intake" and "return" air were used "only to define mechanical movement." In this same decision the term "pure intake air" was used, whereas none of the committee

agreed there was such a thing as pure air in any mine. This led to an attempt to describe air passing through working places, up and down rooms and out to the point where it started on its journey back to the surface exit. The result was the definition, "Working Intake Air."

The terms "gassy" and "non-gassy," applied to mines, mean so much to mine operators in the purchase of plant and equipment required for the one or the other, that the responsibility was shouldered onto the "properly constituted administrative authorities." In other words, no hard and fast definition was attempted. The various state inspection departments have been accepting that responsibility. R. M. Lambie, in his instructions in 1927, to district state inspectors of West Virginia, ordered them to see if coal companies took air samples and how often, and if proper examinations were made of the mine and reports made of same. (*The Explosives Engineer*, March, 1927). Since then he has made the statement that a mine containing one-half of 1 percent of gas is classed as a gassy mine. Mr. W. B. Hillhouse, chief inspector, State of Alabama, has made a similar statement and the A. I. M. E. committee for the investigation of the dangers from oil and gas wells to coal mining operations went on record as recognizing that all coal mines are "potentially" gassy, particularly in a field where oil and gas wells are being drilled simultaneously with the working of the coal bed.

The measurements of air velocities and fan pressures are highly important. Professor A. C. Callen, of the University of Illinois, foresaw the importance of getting correct air flows, as evidenced by the bulletins jointly written by himself and Cloyde M. Smith for the university, covering a period of experiments from 1926 to 1928, inclusive, and published the results in the University of Illinois Bulletins 158, 170 and 185. These are important contributions to our ventilation literature.

In January, 1928, the Bureau of Mines published a report of investigations on "The Resistance of Coal Mine Entries to the Flow of Air," by H. P. Greenwald and G. E. McElroy, in which the statement is made, relative to losses at bends, "for low velocities no modifications of existing square corners would be justified. At the moderate velocities encountered in minor air courses, cutting of the inner corner to a 45-degree bevel would be justified at semi-permanent bends. At the high velocities often encountered in main airways and especially at fan connections, a curve with a center line radius of about 1.5 diameters would usually be justified or, where the outer curve is impractical, the inner curve only."

The less resistance there is in airways, the lower the fan pressure need be for the same volumes of air. The General Electric Company Turbine Research Laboratory threw new light on the subject of resistances at corners in its efforts to reduce losses in turbine duct systems. Contrary to the conclusions of Greenwald and McElroy, the startling statement is made in the reprint of *General Electric Review*, issue of June, 1927, that the loss in a conventional elbow is "reduced 10 percent by replacing the rounded outer corner with a square corner." The investigations go on to show that the greatest reduction of losses at square corners is obtained by placing deflection vanes across the diagonal line between the corners, these vanes being designed from the formula used in aeronautics for aeroplane wings. The Consolidation Coal Co. placed this information to practical use in the approach to the Monongah mine fan. Not only is the air turned at right angles, but is diffused so that a 12-in. layer of air from the fan becomes a 15¼-in. layer of air going down the shaft. (See *Coal Age*, October, 1930.)

J. A. Saxe, chief engineer, Ellsworth Collieries Co., subsidiary of Bethlehem Steel Company, made a valuable contribution to mine ventilation literature in July, 1929 (*THE MINING CONGRESS JOURNAL*), when he published the results of his experience with the altimeter for detecting pressure losses due to constricted airways. Not only were power losses reduced, as he gives in one case \$7,624.50 annually, but added assurance was given that air was going to dilute the gases given off at the faces. Many mining companies do not consider it worth while to employ the services of a man capable of handling an altimeter; also back air-courses, particularly if there are many of them, are not the most delightful places to travel. However, the fan volume may be used as an indicator of underground conditions. First determine the volumetric capacity of the fan or rather the manufacturer's specifications on the fan. If the fan is operating at 1,200 cu. ft. per r. p. m. and it should be producing 2,400 cu. ft. per r. p. m., it is high time that investigations were under way for lack of equivalent orifice. W. J. Montgomery, Jeffrey Manufacturing Company, writes that the altimeter is being used more frequently for locating restrictions and to show the failure for getting volumes expected.

All this goes to show how seriously this phase is being considered in order to get greater volumes of air through the mine and avoid secondary ventilation. The use of auxiliary and booster fans is condoned by a considerable number of mining men; however, the code has attempted to prescribe the conditions under which to operate these types of

fans with the greatest degree of safety (sections 910, 911 and 912).

J. F. MacWilliams, electrical engineer, Pennsylvania Coal & Coke Corp., has shown us recent improvements made in fans to improve the volume and to maintain the pressure, or to lower the pressure at the same volume. This was done at the plants of his company by changing the shape of the *évasé* in one instance and installing turbulence eliminators in the scrolls of the others. As Mr. MacWilliams points out in his paper, delivered before the Coal Mining Institute of America, December 16, 1931, the friction loss of the air passing through the fan may be greater than the loss in the passage. Mr. L. R. Robinson writes of large power savings obtained by changes his company has made in old fan equipment; particularly, at Lewis mine of the Pine Run Company and Victor No. 9 mine of Peale, Peacock & Kerr. Mr. Robinson is a strong advocate of the backward curve blade fan. The physics of ventilation are just as essential as the other phases.

No mine, particularly a gassy mine, is safe without careful and frequent inspections to guard against sudden changes that may occur in the ventilation of any mine, due to roof falls, trip wreck, door open or collapse of a stopping, etc. At Coalwood mine, Mr. W. M. Miller describes a device for sounding a warning when a lack of ventilation occurs on a section. This device is electrically operated but actuated by a pressure diaphragm mounted in a wooden box (*Coal Age*, April, 1928). The code has tried to cover these situations in Part III. Mr. L. D. Tracy, in his article, "Some Common Causes of Coal Mine Explosions," published in *Coal Mining*, September, 1929, ably presents the dangers common to coal mines.

It is also highly important that changes in the ventilation system, by the mine foreman or any official agency, be immediately recorded on the ventilation map. The writer has in mind an explosion where no authentic information was available on the flow of air, and had to be marked on the wall blue print as it came in from time to time. Had the recommendations of the code been followed the complete picture would have been presented immediately.

What becomes of the air after it starts on its way to the various working places is of great consequence. The mine that does not boast of at least 80 percent of all the air that the fan delivers, reaching the splits, is decidedly sub-standard.

Back in 1926, the Union Pacific Coal Co. established a code of standards, and ventilation came in for considerable attention, in which overcasts play an important part, as well as concrete stoppings and protected airways. Provisions are made for double doors in the closed

cross-cut in by the overcast, as against a single door in the overcast, to get into return airways; these return airways, "where the roof has a tendency to cave or slough" must be "center propped" and "the use of doors for the directing or diverting of air is absolutely prohibited within the mine where this can be accomplished by overcasts or other means." This last clause is a severe order, as there are many places where doors can be replaced or eliminated by overcasts; but, the period of usefulness may be so short that the entire cost must be absorbed by operation immediately and, unless the practice prevails generally, throws an undue burden on some and not on others. Nevertheless, this is the requirement in the State of Wyoming and, as a result, practically every room panel must have an individual air split with an overcast at each panel.

The code committee did not consider the individual panel split essential to good ventilation where doors in pairs could be used to confine the air to a traverse of two or three panels and out a back aircourse or over an overcast to the return aircourse. However, the committee did condone the use of doors where good practice called for an overcast. See Part VI, section 600. The subject of doors brings to my mind that both the English and Germans regard a door as a means of deflecting the air and put up with the intention that it remain closed, except while travel is through it. The Germans go so far as to say that "doors which are out of work shall be taken off their hinges" (*Bergpolizeiverordnung*, section 133, paragraph 1). The American operators may do well to inaugurate this regulation; and, those doors which are installed as emergency stand-bys for doors in service, can be marked "emergency," to account for them being open.

At the Coretta mine of The Consolidation Coal Co. a blowing fan is used; but the intake air is introduced into the haulageway at the shaft bottom and the hoisting shaft sealed off, except as to leakage at the revolving dump. Air locks are employed to reduce leakage to a minimum, the principal feature of which is the revolving door, such as used in office buildings, for men entering the intake entries (*Coal Age*, October, 1930.)

The Buckeye Coal Company resorts to air locks both as a means of separating ventilating systems and assuring a movement of air across the faces of advancing working places. On the main haulageways these doors are mechanically and electrically operated. To guard against the hazards of accumulating flammable gas in the high places of an air lock, 2-in. pipes are run from these high places to the return airway so that

the gas is sucked away. (See *Coal Age*, August, 1931.) Part VI, sections 601 and 704 of American Mining Congress Code were formed to cover these conditions.

Sad to say, the death of one of the members of the code committee led to the inclusion of section 512. He, with two companions, went to examine an open light mine that had been closed down but a short time. With the ventilation gone, time elapsed sufficient for gas to accumulate, with the result that their open lights ignited it, causing the death of all three. Numerous other cases may be cited, particularly in the vicinity of Pittsburgh, Pa., where oxygen deficiency has caused deaths.

Regardless of quantities specified, only the quality of the air can serve as a criterion of our actions for good ventilation. The code committee was influenced by the Bureau of Mines "decisions" in the formulation of sections 702 which, in view of recent events, requires explanation. The writer's interpretation of this section has always been that air, at the point where it enters the return (see definition of return) contains $1\frac{1}{2}$ percent of flammable gas, it shall be considered in a dangerous condition. Section 701 is intended to cover limiting gas contents in individual places and if, as opinions were expressed at the A. I. M. E. meeting at Bluefield, W. Va., in October, 1931, the limiting percentages are changed from $1\frac{1}{2}$ and $2\frac{1}{2}$ to $\frac{1}{2}$ and $\frac{3}{4}$, then the inspectors, foremen, assistant foremen, etc., will be required to carry methane indicators, other than flame safety lamps; or use something other than naphtha in their lamps, to be able to detect gas at $\frac{1}{2}$ of 1 percent of the air. The alternative is to employ a man to make gas surveys continuously. At Nemacolin mine, this work is performed by the engineering department and every working section split is checked every week or special inspections made, if and when the operating officials request. At Ellsworth mine (Ellsworth Collieries Co.) an established rule limits the amount of methane in a split to 0.5 percent. (The end of a split, I presume). The section is shut down when the air contains over that percent of gas; but, should there be, say 0.25 percent of gas liberated, then a reduction in the quantity of air on that split may be considered. (*THE MINING CONGRESS JOURNAL*, July, 1929.)

So often we think of danger in ventilation as existing only in the form of methane, without considering the potential damages from vitiated air. Many of us, years ago, have seen the time when, upon walking to the face of a room or entry, we have found the place rather "warm." Absence of air movement and consumption of standing oxy-

gen caused untoward effects on the comfort of everybody exposed. The amount of oxygen usually in air is 21 percent, and man breathes easiest and works best under this condition; but, should the oxygen content drop to 15 percent he becomes dizzy, notices buzzing in his ears, has rapid heart beat and often suffers headache ("Permissible Limits of Toxic and Noxious Gases in Mine and Tunnel Ventilation," by R. R. Sayers, chief surgeon, United States Bureau of Mines).

England and Germany have recognized the dangers of deficient oxygen, as well as those from high temperatures and humidities, and the United States Bureau of Mines in one of its "decisions" placed a downward limit of 19 percent on the oxygen content of mine air. At mine fires and after explosions, observations are usually made for oxygen content of the mine air, by the Bureau of Mines men.

Well directed air movement is the remedy for low oxygen content, as man ordinarily requires only 20 cu. ft. per minute, and the amount specified by most laws for dilution of methane is ample. However, the subject has received considerable attention during the past year.

There is now a tendency to eliminate the underground lamp station. In the draft of this code cognizance was taken of the fact that some of our states permit and make provisions for changing safety lamps underground at gassy mines; some states permit mixed lights, which is equivalent or worse; inference is made in another state that such an act might be allowed as a "device for making lights or fire" may be taken in if authorized or approved, and the United States Department of the Interior "Operating Regulations," section 39, provide for open and closed light sections in the same mine. The practices mentioned may be properly criticised.

Never in the history of mining has the precaution been taken against fan stoppage as it is practiced today. Stand-by power units; double current supplies; warning signals and even duplicate fan installations safeguard the men underground against shutting off the air supply. It is now to be hoped that someone will perfect an instrument that will continuously record the volume of air passing through the fan, just as we get a graph of the water gauge.

Much more may be said upon the subject of ventilation as evidenced by the bibliography; but the conclusion that the writer wishes to leave is that, undoubtedly, the ventilation practices of today had much to do with the very gratifying elimination of major disasters during the year 1931; and, The American Mining Congress code is founded thereon.

CRUSHER ROLLS

of the Susquehanna Collieries Company

By C. H. Matthews*

THE ANTHRACITE coal mines of the Susquehanna Collieries Company are located in the northern, western middle and southern coal fields of northeastern Pennsylvania.

Due to the vast difference between the structures of the coal found in the southern field from that produced at the other mines crushing roll practice must, of necessity, vary at the different breakers.

In the southern field but two steps are needed to break down lump and steamboat to broken and smaller sizes. There is usually a market for about 5 percent of broken size of this particular coal, but when the stock exceeds the demand the excess broken is crushed down to smaller sizes.

In the other fields three-step crushing is employed in breaking down lump and steamboat to steamboat, steamboat to broken and broken to egg.

On account of the reduced demand for the larger domestic sizes it has been necessary to install separate crushers to break down egg coal. These crushers also reduce any broken coal that cannot be sold.

Crushing rolls have been standardized in that all segment supports, shaft and bearings are interchangeable. The diameter at the tip of the teeth is usually about 36 in. and all rolls operate as near as practicable at a peripheral speed of 250 ft. per minute.

Standardizing on one diameter roll presented some difficulties in the selection of gears, but this was finally worked out successfully.

All main rolls have hawk bill teeth. Formerly removable teeth were used, but in later years the teeth are cast integral with the manganese steel segments. When teeth become dull they are re-tipped with "Stellite," which provides a good hard point and results in reduced maintenance cost.

The following results of a recent roll test in the western middle field may be of interest:

* Electrical Engineer.

	No. 1 Roll	No. 2 Roll	No. 3 Roll
Steamboat	65.34
Broken	10.16	27.68
Egg	10.16	42.83	33.52
Stove	4.86	15.66	40.43
Nut	5.30	8.35	18.09
Pea	1.32	2.81	3.72
No. 1 Buck	1.32	1.56	2.25
No. 2 Buck	0.44	0.78	1.06
No. 3 Buck	0.44	0.33	0.60
Dirt	0.66	0.20	0.33
Prepared	95.82	94.52	92.04
Small sizes	4.18	5.48	7.96
Total	100.00	100.00	100.00

The mixture of steamboat and broken coal after passing through No. 1 roll shows a product containing 95.82 percent of prepared sizes. The 65.34 percent of steamboat coal after passing No. 2 roll shows 94.52 percent in prepared sizes. The 27.68 percent of broken coal from No. 2 roll after passing No. 3 roll shows 92.04 percent in prepared sizes.

The results of this particular test on each of the three rolls would indicate very good roll practice. When considering the total loss from breaking down lump and steamboat coal to prepared sizes the final product may or may not be desirable for the market as the following will show:

STEAMBOAT FROM NO. 1 TO NO. 2 ROLLS	
65.34 x 0.2768 = 18.09	Broken
0.4283 = 27.99	Egg
0.1566 = 10.23	Stove
0.0835 = 5.46	Nut
0.0261 = 1.70	Pea
0.0156 = 1.02	No. 1 Buck
0.0078 = 0.51	No. 2 Buck
0.0033 = 0.21	No. 3 Buck
0.0020 = 0.13	Dirt
65.34	Total

BROKEN FROM NO. 1 AND NO. 2 TO NO. 3 ROLLS	
10.16	Broken from No. 1 Roll
18.09	Broken from No. 2 Roll
28.25	Broken entering No. 3 Roll
28.25 x 0.3352 = 9.47	Egg
0.4043 = 11.42	Stove
0.1809 = 5.11	Nut
0.0372 = 1.05	Pea
0.0225 = 0.64	No. 1 Buck
0.0106 = 0.30	No. 2 Buck
0.0060 = 0.17	No. 3 Buck
0.0033 = 0.09	Dirt
28.25	Total

	No. 1 Roll	No. 2 Roll	No. 3 Roll	Total
Egg	10.16	27.99	9.47	47.62
Stove	4.86	10.23	11.42	26.51
Nut	5.30	5.46	5.11	15.87
Pea	1.32	1.70	1.05	4.07
No. 1 Buck	1.32	1.02	0.64	2.98
No. 2 Buck	0.44	0.51	0.30	1.25
No. 3 Buck	0.44	0.21	0.17	0.82
Dirt	0.66	0.13	0.09	0.88
				100.00

The final analysis shows 90 percent of prepared and 10 percent of small sizes including dirt from the original 100-lb. test sample. Egg coal constitutes 47.62 percent, stove 26.51 percent and nut 15.87 percent of the total. If there is a market for egg coal the recovery could be considered good, but if egg coal must be broken down to nut the percentage of prepared sizes would not seem to be very satisfactory.

Comparing the following roll test on Southern Field coal shows the results from two step crushing of lump and steamboat as compared with the three step above on the harder coals.

	No. 1 Roll	No. 2 Roll
Steamboat	44.375
Broken	19.625	8.375
Egg	10.500	25.525
Stove	8.375	25.350
Nut	7.500	18.250
Pea	2.250	4.875
No. 1 Buck	2.500	5.500
No. 2 Buck	1.500	3.500
No. 3 Buck	1.125	2.500
Dirt	1.750	3.125
Prepared	90.875	80.500
Small sizes	9.125	19.500
Total	100.000	100.000

STEAMBOAT AND BROKEN FROM NO. 1 TO NO. 2 ROLLS

44.375	Steamboat from No. 1 Roll
19.625	Broken from No. 1 Roll
64.000	Product entering No. 2 Roll
64 x 0.08375 = 5.36	Broken
0.28625 = 18.32	Egg
0.25250 = 16.16	Stove
0.18250 = 11.68	Nut
0.04875 = 3.12	Pea
0.05500 = 3.52	No. 1 Buck
0.03500 = 2.24	No. 2 Buck
0.02500 = 1.60	No. 3 Buck
0.03125 = 2.00	Dirt
64.00	Total

	No. 1 Roll	No. 2 Roll	Total
Broken	5.36	5.360
Egg	10.500	18.32	28.820
Stove	8.875	16.16	25.035
Nut	7.500	11.68	19.180
Pea	2.250	3.12	5.370
No. 1 Buck	2.500	3.52	6.020
No. 2 Buck	1.500	2.24	3.740
No. 3 Buck	1.125	1.60	2.725
Dirt	1.750	2.00	3.750
			100.000

The final product consists of 78.395 percent of prepared sizes and 21.605 percent of smaller sizes and dirt. The percentage of stove and nut is about the same as obtained on three step crushing of the harder coals. The amount of egg coal is low but the proportion of small sizes is double that obtained from the harder coals.

When comparing the actual proportions of the final product it would appear that the loss in domestic sizes from crushing rolls is far from satisfactory.

Since the trend of the market is towards the smaller sizes of domestic and steam coals there is no great incentive to produce lump coal. If lump coal must be reduced in size through crushing rolls at a loss it may as well be broken at the face.

PRACTICAL OPERATING MEN'S DEPARTMENT METALS

Practical Operating Problems
of the Metal Mining Industry
GUY N. BJORGE, Editor

TRAINING MEN IN SAFETY

by John Campbell¹
and E. C. Mabon²

Eagle-Picher Crutchfield Mine's Safety Record Flag. This mine was runner up in the first Explosives Engineer Trophy Contest

IN THE MINES of the Tri-State District due to the scattered nature of the employment, number of employers, etc., the education of workmen along safety lines has not been attempted by the various companies in any uniform or systematic manner—each employer using the methods thought most fitting to the occasion, and as best fitted in with his mode of operation. Of course, there has been helpful cooperation between the different companies through the Tri-State Zinc & Lead Ore Producers Association Accident-Prevention Department, weekly meetings of the safety engineers of the district where statistics accumulated by the association are checked and discussed, and different plans formulated and agreed upon.

Not a great deal of consideration has been given locally to "safety schools," foremen-training schools, mass meetings of employes, motion pictures, etc., but training effort has been mainly first-hand, and in the main the results accomplished have been very satisfactory. No small measure of this success we feel has been due to the high type of labor employed in the Tri-State District. In practice it has worked out about as follows:

The first step in safety training, of course, must be in the nature of a con-

viction on the part of the employer that safety pays, together with a real interest in the welfare of the workers, and with a definite understanding of the results desired.

As a foundation and guide the employer should keep accurate and comprehensive records of accidents, lost time, compensation costs, medical expenses, statistics of various kinds, which records and information should not only be available at all times, but pertinent parts should be brought to the attention of the foremen and discussed with them and the safety engineer frequently, and certain of the information should be placed before the workers themselves.

Further, it has been found helpful to institute contests of various kinds between different operations of the same employer, and between different employers in the district. These contests, however, must be very carefully arranged, and should not be continued beyond the period of their certain usefulness. Variety is a great stimulator of interest.

The foreman being the direct contact between the company and the worker, his education along safety lines is of paramount importance in any system, and its proper accomplishment is not often easy. He has many duties other than guarding his men from accidents; and it is sometimes very difficult to get over to him



the fact that in getting out production it has been conclusively proven that the safe way is the best way. In general, all foremen should be instructed (either by group instruction or individual instruction, which ever method is found most adaptable to the nature of the operation) in safe practices in the industry; instructed thoroughly as to the safety rules to be adopted by his employer, and methods of enforcing them. It is very poor policy to merely inform a foreman that there exists such and such a rule which must be enforced, as this gets nowhere. Also, it is unfair to the man; more confidence should be reposed in his ability to think and understand why such a rule is desirable, and this should be explained to him by analysis of statistics kept by the employer, costs data, etc.

The foreman, if he is a good one, has

¹ Adjuster, The Eagle-Picher Lead Co.

² Safety Engineer, The Eagle-Picher Lead Co.



Carbide Dispenser at the Netta Mine of the Eagle-Picher Lead Company. This dispenser not only incorporates many safety features but is said to also save carbide

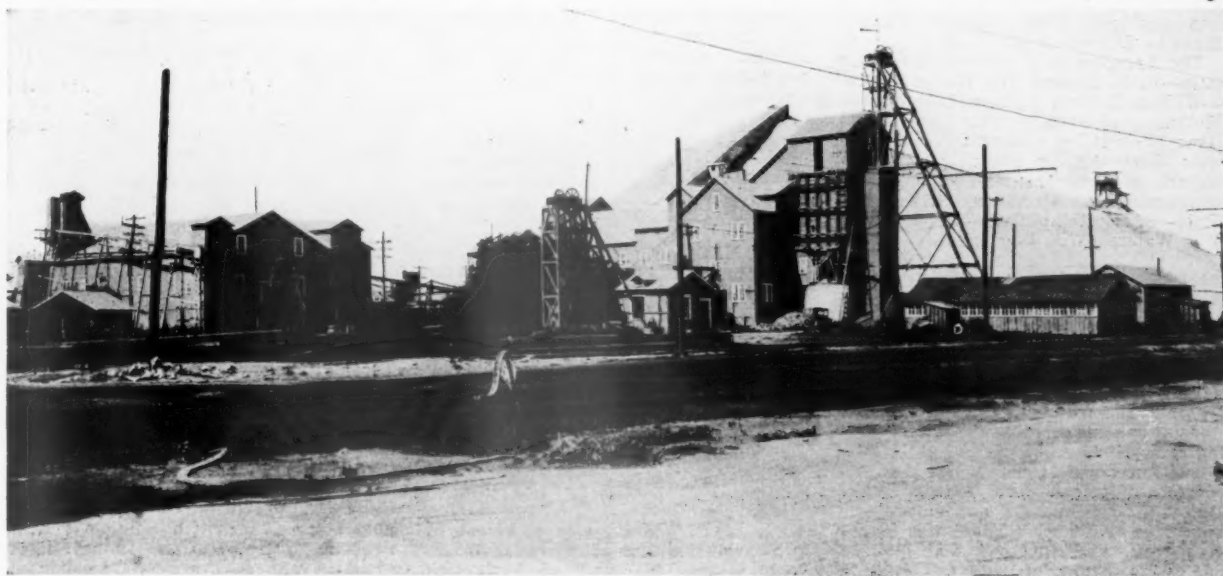
certificates, all have their places; but their effects are in the main transitory, especially if the recognition is awarded for having the BEST record. The mere fact that the winner prevented MORE accidents than the others entered in the contest is not good enough; the result to be desired is the prevention of even those few accidents that he did have. After trying various devices with varying results, we have found that the most coveted prize and the one that comes nearest accomplishing the ultimate is a cash bonus. The workings of various bonus plans, the period covered, amount paid, methods of calculation for ratings, etc., are important, but vary as to the circumstances of the different employments. Most all are good, and often good is accomplished by changing the set-up from time to time.

Of course, it goes without saying that the employer should cooperate with his foremen to the extent of trying to eliminate physically and mentally unfit applicants; and if the foreman is empowered with the authority to pick his own crew, he should be carefully counselled and instructed as to care in selection, and the classification of his men for the different jobs, agility, fitness, attitude, etc. Also it seems almost out of place to mention the fact that equipment should be designed and built safely, carefully inspected after installation, and

maintained in a safe condition, but it is nevertheless a fact that safety features incorporated in much of the equipment as received from the manufacturer leaves much to be desired, and often a foreman, and frequently the workman using the equipment under consideration, is able to suggest changes which go a long way to improving the safety features of the machine. If they have been properly educated in this phase they will volunteer such suggestions. And not the least of the considerations with regard to safety is the maintenance of the machine in a safe condition. A guard out of place may not only fail to prevent an accidental injury on the machine, but may itself cause an accident by someone bumping into or stumbling over it. And one of the most difficult, seemingly impossible, things to educate a person to do is to keep a safeguard in place, or to use it.

And, if the employment of fit and capable men is of importance from a safety-education standpoint, not less so is the employment of proper tools kept in a safe and efficient condition. Dull cutting tools, battered hammers and wrenches, have caused many a serious, painful, and costly injury. It is much cheaper to replace a broken wrench than a broken arm. To get a man to see this is a real step in safety education. It should be brought home that good workmen using good tools are seldom injured. The foreman should be fully informed as to safety requirements and standards with regard to different machines, tools, and working places, and should make it a point to inspect them frequently and see that they are maintained in the best possible condition.

While the foregoing has been stated more specifically (*Continued on page 73*)



The Netta Mill of the Eagle-Picher Lead Company, at Picher, Okla.

NEWS

of the mining field

Coal Conference

The Fifth Annual Mid-West Conference was held at Purdue University, Lafayette, Ind., April 14-15. The meeting was also sponsored by the University of Illinois, the coal trade associations of Indiana, the Illinois Coal Bureau, Illinois Geological Survey, National Association of Power Engineers and the Fuel Division of the American Society of Mechanical Engineers.

Fourteenth Annual Meeting, American Zinc Institute, was held in St. Louis, Mo., April 18-19-20. Among the important papers presented were the following: Eagle-Picher's Central Milling Project in the Tri-State District—R. J. Stroup; the Metaline Falls Zinc Mining District—L. P. Larsen; Sprayed Metallic Coatings—A Field for Increased Use of Zinc—L. E. Kunkler and R. E. Axline; Recent Developments in Zinc Die-Casting—W. M. Peirce; A New Viewpoint of the Sherman Anti-Trust Law—Barnabas Bryan, Jr.; Traffic Problems of the Zinc Industry—A. J. Bien; Progress of "Seal of Quality" Program—J. D. Conover; Technical Studies of Zinc Coated Materials—G. C. Bartells; Telling the Story of Heavy-Coated Sheets—K. J. T. Ekblaw; Selling the "Seal of Quality" in the Field—Chas. Matthews; Why We Believe in "Seal of Quality" Sheets—Karl Roth; If You're Going to Sell Sheets, Sell Good Sheets—Dave Livingston; The Dealer's Viewpoint—Chas. A. Kiefner; The Farmers' Roofing Problem—Alvin O. Eckart; The Farmers' Need of Quality Materials—Professor E. W. Lehman; and the Missouri Farmer Must be Shown—J. C. Wooley.

The Progress in the Roasting of Zinc Ores—R. E. Rowen; The Waelz Process—William E. Harris; Progress Report on Methane Reduction of Zinc Ores—R. S. Dean; Recent Developments in Electrolytic Zinc—Arthur Zentner; Progress Report on Experimental Study of Embrittlement in Galvanized Structural Steel—S. Epstein; Salts in Tri-State Mill Waters—Will H. Coghill.

Mine Reports

The Bureau of Mines issued reports on the washability of coal of Alabama, with special reference to sulphur elimination; milling methods at the concentrator of the Walker Mining Co., in California; splicing of rubber-sheathed trailing cables.

The Bureau of Mines reports that 63,880 tons of potash were produced in the United States in 1931 and sales were valued at \$3,086,955. There was an increase of 4 percent over that in 1930 due to the opening of the potash-bearing mine near Carlsbad, N. Mex.

Personals

Two former presidents of The American Mining Congress visited the national headquarters of the organization recently. They were H. W. Seaman, of Clinton, Iowa, who was in Washington in connection with Congressional hearings on inland waterways improvement; and L. S. Cates, of Salt Lake City, who was a member of a delegation of copper producers and members of Congress from copper producing States who called on the President in the interest of a tariff or tax on copper imports.

A number of prominent mining men who are members, or alternates, of the Executive Tax Committee of The American Mining Congress were in the city, conferring at the headquarters of the Mining Congress with its staff officers in connection with proposed changes in the mine tax sections of the income tax law which are now before Congress. These visitors include: H. D. Chamberlain, of Hudson Coal Company; John L. Glenn, of Pittsburgh Coal Company; H. C. Jackson, of Pickands-Mather Company; Matthew C. Fleming, of New York City; W. H. Peters, of M. A. Hanna Company; H. B. Fernald, New York City; J. W. Allen, of Greene Cananea Copper Company; A. G. Mackenzie, of Salt Lake City, and O. M. Gordon, of Bell & Zoller Coal & Mining Company.

JAMES F. CALLBREATH, Secretary of the American Mining Congress, was in St. Louis recently attending the annual convention of the American Zinc Institute.

COMPTON I. WHITE, president of the Whitdorf Mining and Development Company, of Clarkfork, Idaho, will be a candidate for Congress this year.

GEO. H. CROSBY, of Duluth, Minn., was in Washington last month attending the annual meeting of The American Red Cross.

DONALD A. CALLAHAN, of Wallace, Idaho, was in Washington last month and appeared before the Senate Finance Committee on the mine depletion changes proposed in the tax law. He represented the Northwest Mining Association.

DR. L. E. YOUNG, vice president of Pittsburgh Coal Company, was in Washington during the week of April 11th on business.

A. B. PARSONS, Secretary of the American Institute of Mining and Metallurgical Engineers, spent last month in Washington on special work with the Bureau of Mines.

Tax Refund

The Internal Revenue Bureau authorized a tax refund of \$137,864 for 1926 to the Allied Chemical & Dye Corporation.

Canadian Coal

Plans are under way in Canada to have a million more tons of Nova Scotia coal used annually in Quebec and Ontario which, it is estimated, will displace 10 percent of coal now imported from the United States.

Arizona Mining Developments

The South Pilgrim Mining Company plans development work on its properties following surveys by Fred W. Koehler and D. E. Woodbridge.

T. F. M. Fitzgerald, its president and superintendent, announces that the Comstock-Dexter Gold Mining Co., is planning to put its properties on a production basis.

Construction of a \$600,000 plant, including facilities to mill 500 tons daily, is planned by the Arizona Mining and Milling Co.

Grub Stake Planned

The Alaska Grub Stake Co. has been organized on a cooperative basis by a group of Seattle business men for gold exploration in Alaska.

Mine Meeting

Resolutions favoring restoration of silver as money and for the creation of a mining department by the State of Washington were adopted at the 38th annual spring meeting of the Northwest Mining Association recently held at Tacoma, which was also featured by an interesting mineral exhibit. Opposition to drastic cuts by Congress in the appropriations for the Bureau of Mines was also registered. Leon Starmont, secretary of the association spoke on blue sky laws. Other speakers were John D. Galloway, provincial mineralogist, on gold mining in British Columbia; Ross Brattan, Homestake Gold Mining Co., of Idaho; Frank B. Prescott, Consolidated Mercury Mining Co.

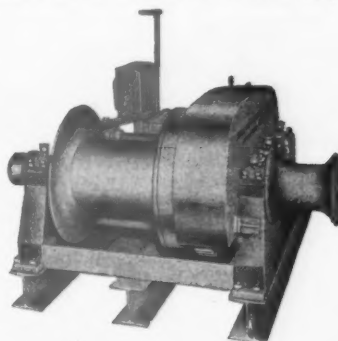
With the MANUFACTURERS

American Metal Market announces the publication of Metal Statistics, 1932 (the 25th annual edition). With this edition, Metal Statistics completes a quarter century of statistical service to the ferrous and non-ferrous metal and allied industries, and gives the record of production, consumption, imports, exports, stocks, price fluctuations and averages (monthly and annually), data on various brands, analyses, trade terms, custom duties, etc., applying to finished and semi-finished ferrous and non-ferrous metal products as well as raw materials.

New Wire Rope

The Broderick & Bascom Rope Company, of St. Louis, announce the addition of a new product to its line of Yellow Strand Wire Rope in the "Flex-Set" pre-formed construction wire rope. This "Pre-Formed" feature is said to remove internal stress, make splicing easier and better, reduce the external wear and greatly increase the life of the rope.

Combination Drum and Capstan Car-Puller Friction Clutch Type



The Fridy Hoist & Machinery Company, Mountville, Pa., announce a new combination drum and capstan car-puller for "Spotting" a train of loaded railroad cars in either direction and at slow rope speed which very much simplifies the handling of cars at the tippie. One man operating a car-puller of this type has complete control of all the car

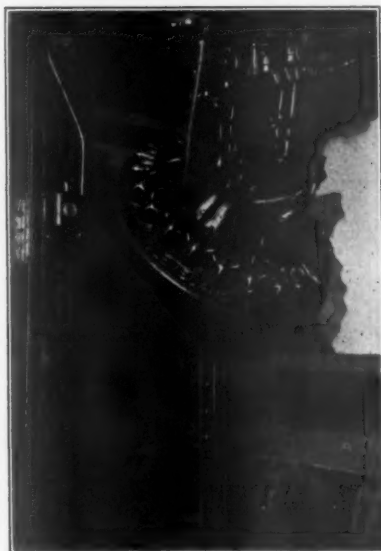
placements. For handling long hauls of 900 feet and under, steel cable is used on the drum and for shorter hauls of less than 300 feet the capstan can be used to advantage with manilla rope.

This car-puller is furnished in the 7½, 10, 15 and 20 hp. motor drives for "Spotting" a train haul of 500 tons and under, and can be of great service as a cost-saving equipment for pulling small mine cars underground at the discharge section of the mechanical loaders in the 7½ and 10 hp. sizes.

Bulletin No. 115-A, describing the new car puller in detail, will be furnished free upon request.

Worthington Pump

A list of new catalogs and bulletins descriptive of its products has been issued by the Worthington Pump & Machinery Co., of Harrison, N. J., copies of which will be mailed on request to the company. The products include stationary diesel engines, marine diesel engines, gas engines, portable air compressors, vertical sump and irrigation pumps and centrifugal pumps.

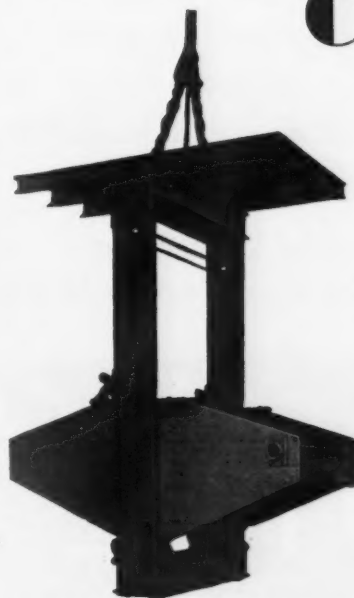


STOPS TRAMP IRON

EC&M Separator Magnets give the double assurance of uninterrupted production and a cleaner product. Coal or ore, wet or dry material is freed from the menace of tramp iron. They operate for years with no maintenance expense. Write for Bulletin 910 picturing and describing many interesting installations.

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All steel cages for heavy, rapid and continuous hoisting. Most modern design combined with unusual structural strength. Protected by automatic safety features. Send for further details of these reliable and efficient cages in Bulletin 52.

Holmes equipment includes Sheaves, Coal Lowering Spirals, Electric Car Retarders, Hoists, Handling and Weighing Equipment and Complete Tipples

ROBT. HOLMES & BROS., Inc., Danville, Ill.

THE COAL DIVISION

(From page 62) for our mutual benefit and a more rapid progress. The Coal Division has been designed and organized to serve that need.

There will be some objectors to this plan who will take the position that a company which has developed a successful method would lose a tactical advantage over its competitors by giving out information. There are three answers to such an objection. The first is that information on a new mining method cannot be kept confidential within a company—at least it has not been done so far. There are too many in the secret and anyone on the outside who wants to find out what is being accomplished can do so. The second answer is that no one company, no matter how progressive, has a monopoly on the best ideas. The third answer is that no one individual or company can ever claim to have originated and developed a new method in its entirety. Either consciously or unconsciously suggestions have been obtained from outside sources. So it is much better to recognize these three things and to get the fuller advantage which is possible by the exchange of accurate data.

The primary purpose of this proposed exchange is to make economic studies of different mining methods and types of equipment—that is to find out what are the factors which limit or govern the economical use of a method or machine; to determine the effect on the total mining cost of such items as mine car capacity, conveyors, track-mounted equip-

ment, coal cleaning, lubrication, mechanical loading, roof support, timber preservation, etc. Also to determine the extent to which each of these items is limited by the seam conditions, labor rates, and market requirements. It is proposed that these studies will cover all phases of mining from the face to the railroad car.

The value of an operating method at any mine can best be judged by comparisons with records made at other mines by similar methods or by different methods. Such a comparison would require operating analyses of a number of mines—all made on the same basis and showing the production record made in each operating phase and also showing how this record affects or is affected by the other operating phases.

Our information service proposes to furnish each member with an analysis of his own mine and with similar analyses of the mines of other members. These will describe the mining system, the amount and type of equipment used, the daily tonnage produced, the number of men employed, and the mining cost for each operating phase. Costs will be expressed in man-hours per ton so as to eliminate the effect of wage differentials. These analyses will be made by the mechanization engineer after his personal inspections of the underground work, using data furnished by the mining company with such modifications as may be necessary to put all reports on the same comparative basis. Each report will be limited to certain operating phases so that the complete cost at any one mine will not be revealed.

The Division will carry on investigations to determine the trends of industry in such matters as workmen's compensation, safety, unemployment insurance, five-day week and on any other subject that may be of interest to mining men. Contacts with various state and Federal agencies will be maintained to keep the membership advised of any legislation which affects the mining industry and bulletins on these subjects will be sent to our membership at regular periods. In brief, the work of the Division is to be on a sufficiently broad and comprehensive scope to include all matters which may affect either directly or indirectly the operations of coal mining.

THE EXPOSITION OF COAL MINING EQUIPMENT

(Continued from page 55)

- W. S. Tyler Co., Cleveland, Ohio.
- Tyson Roller Bearing Co., Massillon, Ohio.
- U. S. Bureau of Mines, Washington, D. C.
- Universal Lubricating Co., Cleveland, Ohio.
- Weir Kilby Corp., Cincinnati, Ohio.
- Western Cartridge Co., E. Alton, Ill.
- West Virginia Rail Co., Huntington, W. Va.
- Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- Willson Products Co., Reading, Pa.

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CINCINNATI

TRAINING MEN IN SAFETY

(From page 69) with regard to the foremen, all of it applies with equal force with regard to the individual workmen, except that it becomes more difficult to place responsibility on the workman. On account of labor turnover there are always new men to be trained, and in many instances just about the time a man does become convinced that the safety idea is a good one he moves on. So we have found that we must rely to a great extent on the efforts of the foreman in the education of the workman, and this has its complications. Often we have foremen who are unusually good producers, but who claim that they can not get safety rules observed. And they can not so long as they hold this attitude. But by various expedients many have been convinced of the error of their stand. One way, by getting them to see that safety observance is merely another part of the man's work—that if it is a part of the man's work to completely load a car instead of only partly doing so, it is also a part, and just as much and possibly a more important part of his work to observe all the safety rules and regulations promulgated for his benefit. If the foreman still can not be made to see it in this light it merely means one of three things: his safety education has not been conducted properly, he is not inter-

ested in safety, or does not believe in it and is opposed to safety effort.

Some foremen have much better success than others in educating their crews, but in the main the methods used by all are similar: Example, Persuasion or requirement, and Force.

For instance, in a place where goggles are needed, if a worker sees his foreman perform the occupation without wearing goggles he can not be blamed for performing the same operation with his goggles around his neck. While goggles in such a position may prevent a lacerated Adam's Apple, the risk of such an accident is very slight, and as a safety feature they are really of very little use. The responsibility is squarely up to the foreman. A man can not conscientiously be required to wear safety shoes when his foreman wears oxfords. These things must be demonstrated by the foreman, and brought to the attention of the workman, and explained to him, with real instruction as to the reasons for their requirement and use.

After the workman is instructed as to proper safeguards to be used, the reasons for their use, etc., his education is only partly complete. He must thoroughly understand that their use is *required* at all times. Most workmen if the matter is brought to their attention in a proper manner are easily persuaded to comply.

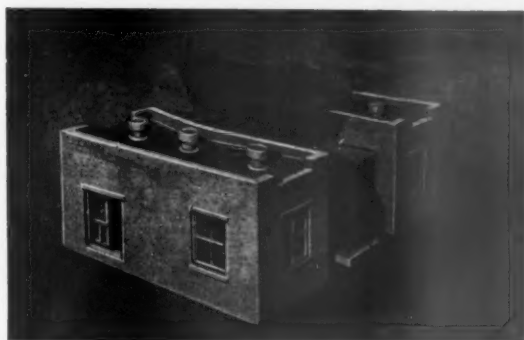
If not, force must be used. This force ordinarily is a warning or reprimand, and in case of persistent violation in a few instances for a short period of lay-off; then if still antagonistic, discharge. And while trying to educate the rule violator the employer must be tolerant, this tolerance of violations is not required to run to seventy times seven, as experience has taught that long before this period has expired an accident occurs.

Much more elaborate and intricate educational procedure is employed in some industries with varying degrees of success, but our methods as outlined herein have in this industry and District accomplished what was desired, a very gratifying reduction in our severity rate, and an even more gratifying reduction in our frequency rate.

B. & W. Tube Company Opens Detroit Office

The Babcock & Wilcox Tube Company, Beaver Falls, Pa., announces the opening of a new branch office, in the Ford Building, Detroit, Mich.

Mr. J. E. Polhemus has been appointed District Sales Manager, in charge of the Detroit territory. Mr. Polhemus was formerly Assistant Vice President and District Sales Manager of the Detroit sales branch of the Associated Alloy Steel Company, of Cleveland, Ohio.



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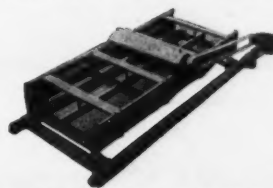
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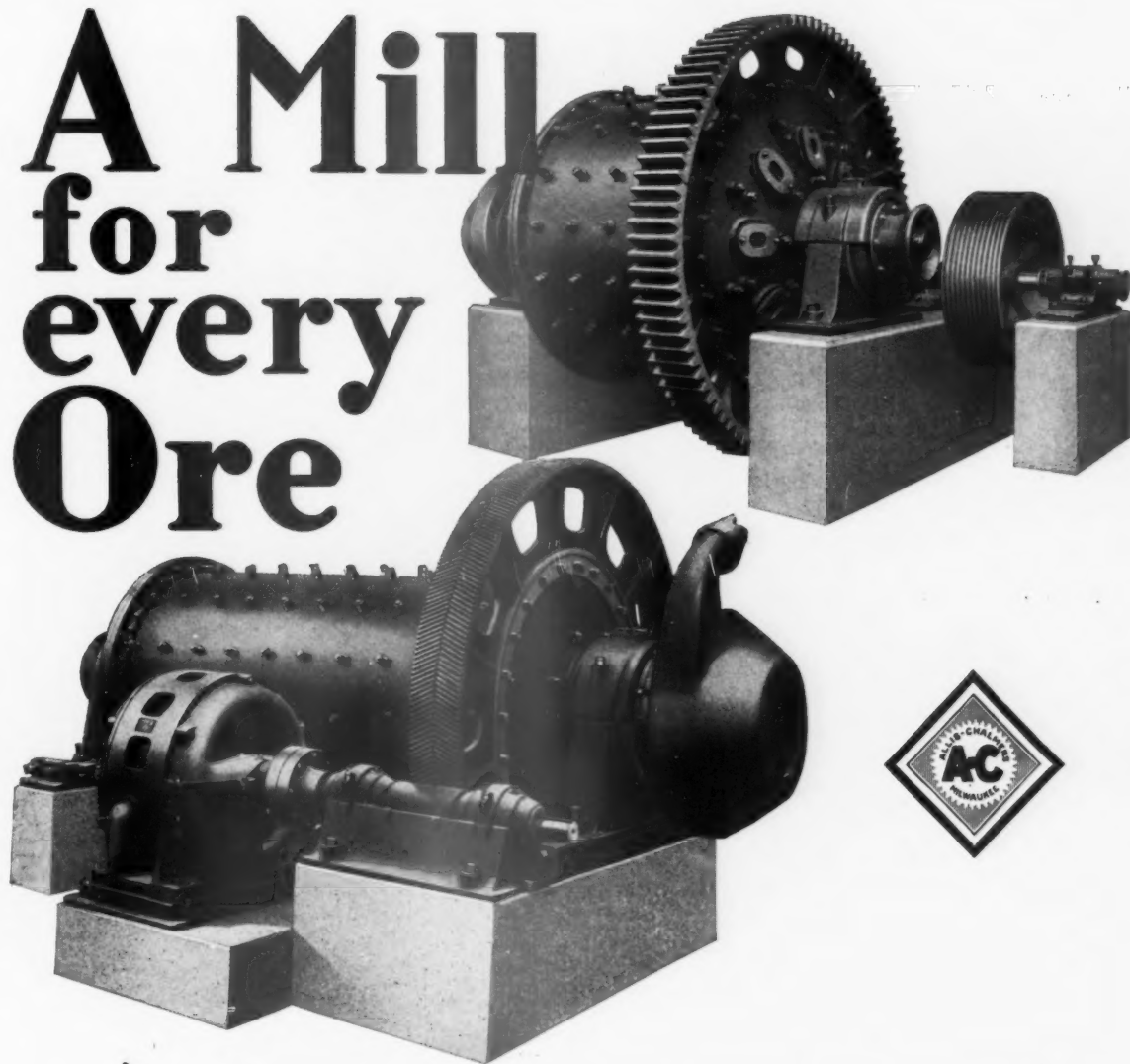
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DIAMOND CORE DRILLING

CONTRACTORS

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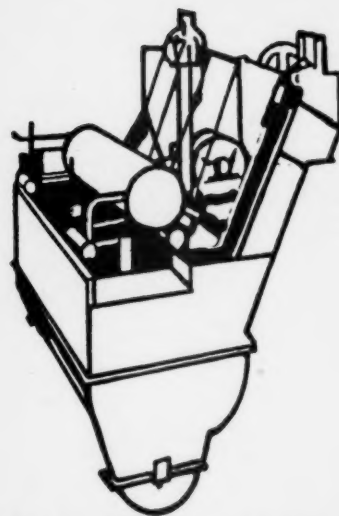
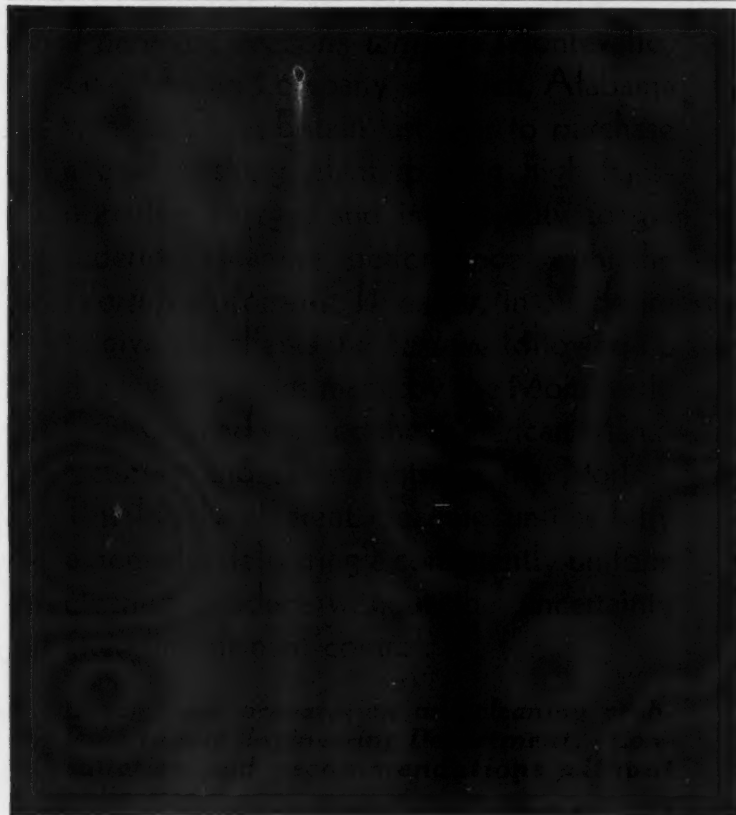
Allis-Chalmers builds a complete line of mining and metallurgical machinery; also hoists, power machinery, crushing, screening and grinding machinery, electrical motors, Texrope drives, and centrifugal pumps.

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THE 5 STAR NORTON AUTOMATIC COAL WASHING SYSTEM

- ★ 1. Automatic refuse discharge.
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